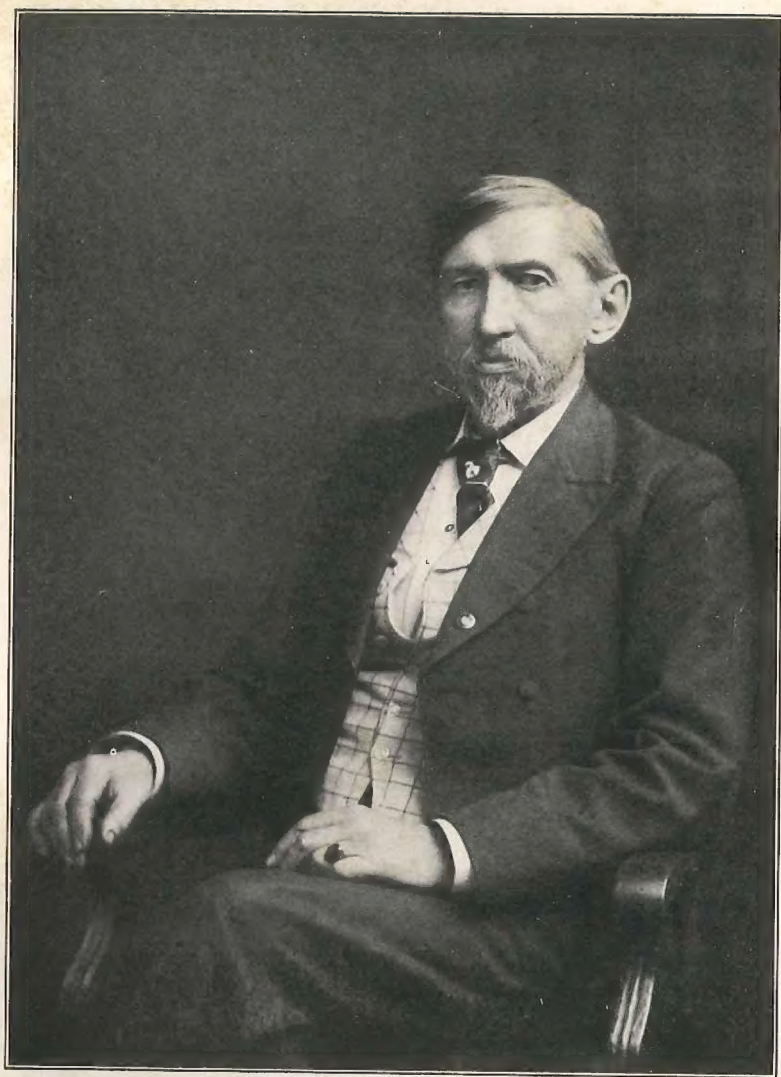


GEOLOGY AND
ARCHAEOLOGY

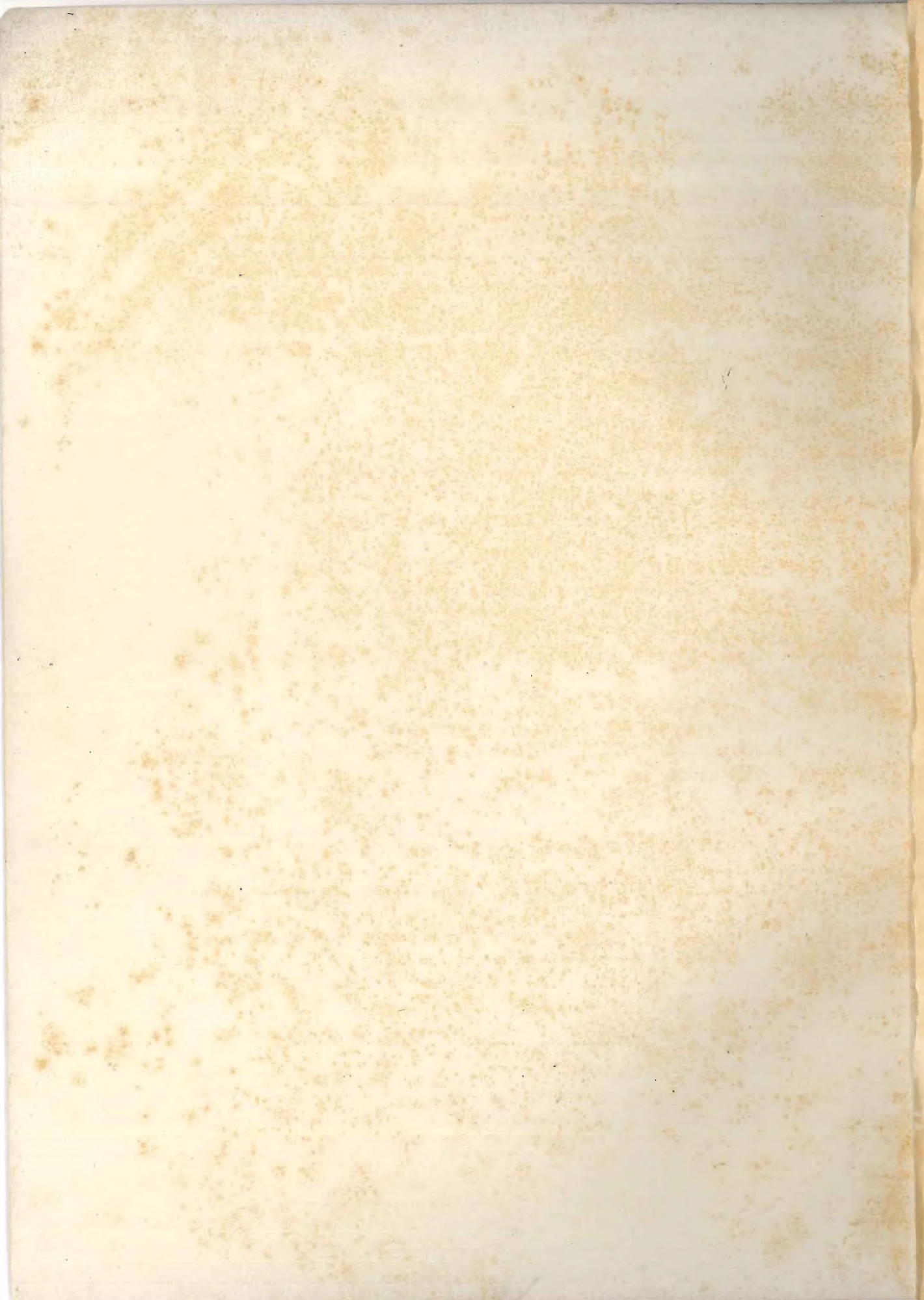
OF

WAYNE COUNTY,
OHIO

BY J. H. TODD, M. D.



Joe H. Loid



Geology and Archaeology

OF

Wayne County, Ohio

BY

J. H. TODD, M. D.

Illustrated

B. F. BOWEN & CO.
INDIANAPOLIS, IND.

1910

Received of Mr. J. H. [illegible]

the sum of [illegible]

for [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

INTRODUCTION.

In Douglas' History of Wayne County there is a very concise description of the geological structure, but not a clear differentiation of the two almost equal halves of the county.

It is generally known that in the south and east half of the county is found coal (all of the seven veins being represented) and many hilltops are capped with lime, while in the north and west there is no coal and no limestone. Now the dividing line between these widely separated geological formations is a preglacial river bed extending from Loudonville to Shreve and on by Wooster and Orrville to Sterling and from here, my own observations lead me to believe, it went north through Chippewa lake and the old and deep channel of Rocky river to Lake Erie. But Frank Leveret, of the United States geologic survey and who has examined the ground, favors a route from Sterling by Warwick and the Copley Marsh to the Cuyahoga river and through it to Lake Erie.

Leveret says (pages 163-5, Monographs of the U. S. Geological Survey): "J. H. Todd has recently called attention to evidence that the lower courses of these tributaries of the Mohican creek had an eastward discharge. There is a continuous valley or lowland with an average width of about a mile following the Pittsburg, Fort Wayne & Chicago railroad from Mansfield to Wooster, Ohio. East of Wooster there is a great drift accumulation, rising nearly two hundred feet above Killbuck valley, but it is Todd's opinion that the old valley continued in that direction about ten miles, to the vicinity of Orrville, where a valley is found with very low rock floor.

"This valley seems to have drained northward either to Rocky river or the Cuyahoga, passing Sterling.

"The writer is inclined to favor the view that this valley had a course eastward from Sterling to Warwick, and thence north past New Portage and Copley Marsh into the old Cuyahoga, that being a larger valley than the old Rocky river valley.

"Todd, however, favors the Rocky river valley as the line of discharge into Lake Erie."

"The valley under discussion, with its deep filling of drift, shows general eastward descent, as indicated in the table given later. The available data

concerning the rock floor shown in the table, though meager, also favor the view that it slants eastward. It furnishes a more natural trunk line than any other old line of drainage yet found in that region. The several tributaries of the Mohican creek converge toward this old valley and seem to find in it a natural line of discharge. This old line may properly be termed the Old Mohican."

Further, Leveret says, in writing of Killbuck: "It is quite certain that the old valley which leads northward along the Killbuck as above noticed from Shreve to Wooster, did not continue along this creek beyond Wooster. * * * * The continuation of that old valley (the Old Mohican) was probably eastward, as suggested by Todd."

Again Leveret says: "A large part of Killbuck valley apparently once discharged northward to the Old Mohican, for there is a marked narrowing of the valley in passing southward down the present stream."

So here we have our preglacial river authoritatively established from Loudonville to Sterling at least, and supplemented by the Killbuck channel from the col near Killbuck village in the coal region to where it joins the axial channel six miles below Wooster, developing a tripod lake two by three miles in extent, and this river is now, although no man ever saw it, named the Old Mohican.

We have found from investigation and examination of fossils, that this ancient river ran exactly around the northeast head of an island that represents the oldest dry land in the United States—an island standing sentinel in both a Silurian and Devonian sea—ages before the Alleghany mountains were evolved or the coals of the carboniferous age had filled the Allegheny basin, to form, out of carboniferous conglomerate, an eastern bank to our river.

I also find the line of the Old Mohican marked by the Waverly clay (as reported in the "Soil Survey" of the county. The Waverly shale was ground-to clay in the glacial mill as it came up our valley from Sterling to Orrville, and erosive streams have since carried the Waverly sand over the new valley and deposited it as a soil nine to twelve inches in depth.

It really makes no difference to Wayne county whether the waters in the Old Mohican went from Sterling by the Rocky river, or the Cuyahoga, to Lake Erie, for all the writer claims, from original investigation, is that there is a deep and wide preglacial river bed, now filled with drift, from Loudonville, through Wayne county to Sterling, and that the channel passes exactly between the Waverly hills of the Cincinnati incline and the coal measure conglomerate, and that it carried all the waters of all Mohican's



Wayne County
HISTORICAL
SOCIETY of Ohio

MAP AND SCALE

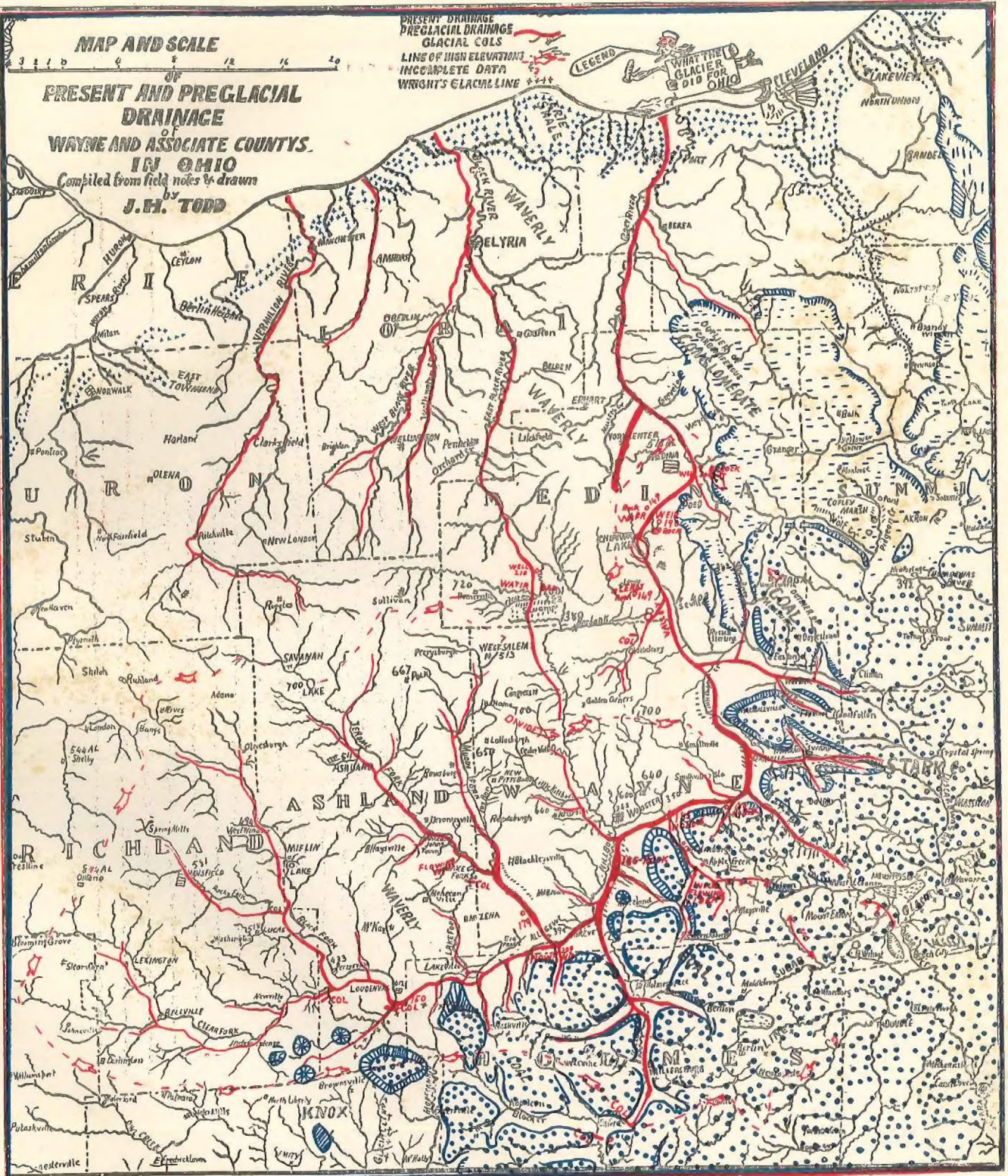
PRESENT AND PREGLACIAL
DRAINAGE
OF
WAYNE AND ASSOCIATE COUNTYS.
IN OHIO

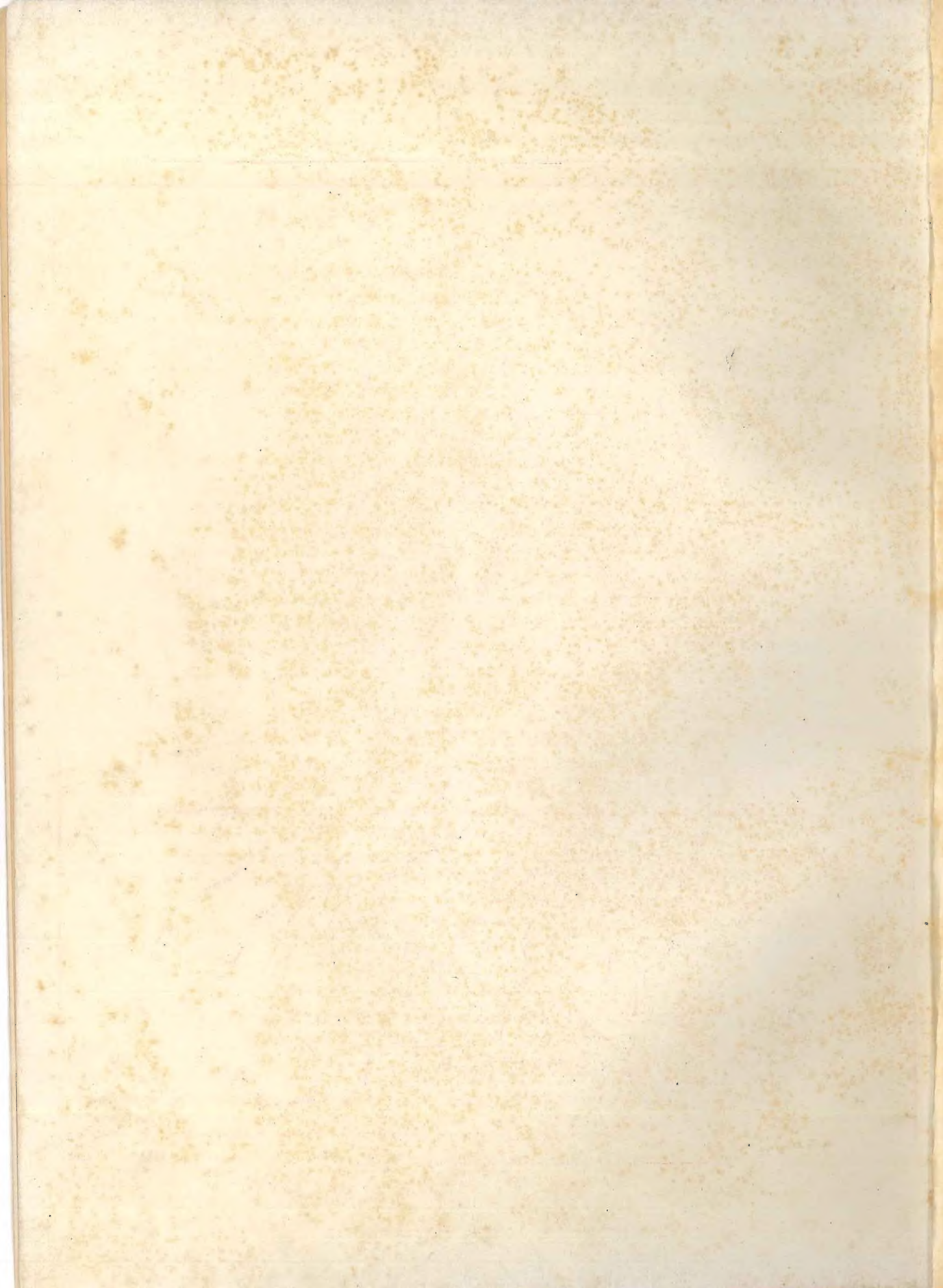
Compiled from field notes & drawn
by
J.H. TODD

PRESENT DRAINAGE
PREGLACIAL DRAINAGE
GLACIAL COLS
LINE OF HIGH ELEVATIONS
INCOMPLETE DATA
WRIGHT'S GLACIAL LINE

LEGEND

WHAT THE
GLACIER
DID
OHIO





branches, together with the reversed Killbuck and Sugar creek, north to the bed of Lake Erie.

PREGLACIAL TOPOGRAPHY.

In order to give any clear idea of the glaciation of Wayne county it is necessary to take into consideration the preglacial topography, of not only Wayne, but of all the adjacent counties, for the drainage streams derive their headwaters in almost all instances from springs in neighboring counties, and many of the streams are reversed in at least part of their flow. The red lines in the accompanying map indicate the preglacial, and the black the present drainage of the district. While the highest hills and practically all drainage lines have been so modified by the glacial drift in some places four hundred feet thick—that the preglacial aspect of the county is not now recognizable.

The nature and magnitude of the glacial effects are beyond conception. You must give wings to your imagination to contemplate the picture, even after carefully considering the altitudes and depressions I will give you.

Wayne county rests on the northeast face of what was, in the dawn of the earth's organic history, an island in a Silurian sea. And a large arm of the Atlantic, known as the "trough of the coal measures," which was a warm sea with only the lowest order of life existing in its depths, afterwards surrounded it. This island, or low mountain chain, extended from Sandusky, Ohio, far into Kentucky, while its breadth was from forty to one hundred and twenty miles, and it is now known geologically as the "Cincinnati Arch," or "Anticline;" poetically it has been called the "Lost Atlantis."

In Ohio, and particularly in Wayne county, it presents in relief, and shows bold headlands, while in Kentucky it is in intaglio and was once submerged to receive the limestone that constitutes the "Blue Grass region." Here, in Wayne county, the arch is capped by Waverly sandstone and shale, as can be seen at the Reddick quarry, the Coe quarry, along the Christmas run and at the shale brick works west of the city, where many characteristic fossils are to be found, particularly crinoidea, conularia and productus. At these points there seems to be an association with the Devonian and lower carboniferous ages.

In studying the Waverly group of rocks in this part of the island, I find a crescent of highest rock hills in the state, extending by Smithville Summit in Wayne to West Salem, Polk, in Ashland, and Mansfield, Belleville, and Independence, in Richland counties, which constitute a continental divide from which the rock strata dips away on the west under the coal fields of

Indiana on the north under the bed of Lake Erie, while on the east they decline gradually into the synclinal trough of the Allegheny coal basin. This constitutes a watershed in three directions and Professor Newberry says (in Vol. 1 of Geological Survey of Ohio), "It will be noticed that the direction of the drainage streams, which follow the strike of the strata on either side, indicate that it once formed a watershed that gave the initial bearing to their flow."

It did more, for the fresh water from these many streams meeting the water of different density, temperature and chemical composition would create a current around the shore of the island.

If you will go with me, carrying an aneroid barometer to note elevations, from Wooster, by Mifflin, to Belleville, in Richland county, you will cross all the streams at points of original scoring that drained the northeast face of this headland and carried their waters to the channel of the Old Mohican.

Starting at Wooster University, we find it stands five hundred and twenty-two feet above Lake Erie; Killbuck valley, three hundred and thirty-two feet; Jefferson, near rock summit of plateau, six hundred feet; the flood plain of Muddy Fork, four hundred and thirty-two; and the divide between this and the Jerome fork of the Mohican, six hundred and fifty, while its flood plain is four hundred and fifty; Hayesville, on the summit of the divide between the Jerome and Black forks, seven hundred, and the flood plain of the Black fork at Mifflin is five hundred feet; the depot at Mansfield, five hundred and eighty-one; the plateau south of the city, eight hundred, and above Belleville, nine hundred. In the cross section from Ashland to Loudonville the divide between the Jerome and Black Forks—independent of glacial deposit—is nearly a level plain with only a gradual descent of fifty to seventy-five feet. But these elevations do not mark the summit of our present hills nor the heads of present streams, neither do they cover the preglacial drainage of Congress and Chester townships. The old divide entered the county two miles south of West Salem, and crossed the township diagonally south of Congress village and crosses what is now the Killbuck one mile north of Overton, and entering Wayne township it intersects a north and south divide from Burbank to Wooster, but continues on across Wayne into Green township, ending with and marking the head of the island east of Smithville, where the strata is badly crushed and eroded deep under the bed of the old Mohican. The north and south divide is a continuance of the divide between the Black and Rocky rivers and, passing east of Lodi and Burbank, nearly parallels the Killbuck from Burbank to Overton, but here deflects southeast to Wooster, where Wooster University stands on a pinnacle of wa-

verly one hundred and seventy-two feet above the city's square. By this crossing of the divides near Overton we had in evidence a range of highest preglacial hills in the county. The rocks here banking the Killbuck are now less than eighty rods apart although nearly two hundred feet high and the stream runs on a rock bottom for half a mile, while from the crests of the hills drainage lines were projected in four directions. All the waters of northeastern Congress township were carried, with the waters of Killbuck from Overton, through an old preglacial channel one and one-half miles west of Burbank to the Black river, west of Lodi and thence to Lake Erie. The district south of the divide in Chester and Congress townships—save a fringe of drainage into the Muddy fork of the Mohican—was carried into a preglacial channel leading by Ft. Hill to Wooster and ending in the Old Mohican near the Apple creek bridge. This channel is now followed by the Little Killbuck to Ft. Hill and drains a large territory, carrying pure spring water that could and should be utilized by Wooster, for it is gravel and sand filtered, and is available either by artesian or pump wells.

This Little Killbuck was in preglacial times the Big Killbuck—in fact, the only Killbuck, for the drainage south from Overton was only a rivulet. The Little Killbuck is now an anomaly, reversing the common law of creeks; it is a creek turned upside down. Its gravel bottom is now on top, supported by a shelf of boulder clay and sand, and the water runs beneath except in springtime freshets when its torrential waters carry great loads of gravel and clay to its mouth and there bank it. In this way it has driven the channel of Killbuck across the plain half a mile, where it is now eating out a bed from the Waverly shale and sandstone on the Eicher farm, section 5. Two miles to the south the new Apple creek has sent the Killbuck across the valley to the western hills in the same manner, as I have found evidence of three distinct channels of the Killbuck—each one long used—between the Cemetery hill and its present bed, which hugs the shale and glacial hills on the west three-quarters of a mile away, and between these old channels and the Apple creek the beavers had their home-life fun in the quiet waters, held by the dams they built from cedar logs which are now found in the buried channels.

The drainage of the northeast section—that bounded by the Continental and the north and south divide—included the bulk of Wayne and Canaan townships. The three heads of the present, and old Killbuck followed the line of least resistance with the strike of the strata to near Jackson where they united and carried their waters to the Old Mohican, near Sterling. But in glacial times this channel was blocked by drift above Jackson and the waters turned west to cut a new channel through the shale of the north and south

divide to Burbank, nearly seven miles away, where the stream was again turned at an obtuse angle into the old Killbuck channel, passing, after traveling twenty-four miles, within one mile of the springs that form its head.

The drainage from the southwest of the divide from Overton to Wooster is represented by the Clear creek and the Christmas run. The Clear creek follows the strike of the strata in an old preglacial scoring to section 31 in Wayne township, where the old channel to the fair ground by the shale works was blocked by hundreds of feet of drift, creating beautiful terraces over the John McSweeney and Yoder farms on section 5, Wooster township, and there had to cut its way through the shales of the Eicher farm, section 6, to the channel of the little Killbuck.

The Christmas run practically follows a preglacial channel over a boulder and boulder clay bed, but now cuts into the shale on the Byres farm, southeast quarter section 5, making a bed of the rock and giving the student a wealth of Devonian fossils—stone lilies, productus shells and conularia for his cabinet.

The drainage from Wooster University to the divide east of the summit near Smithville, where the dip of the strata of stone determines the end of the Cincinnati Arch, or Silurian island, the primitive rocks ran under, or were torn out by the floods of the Old Mohican, and all drainage from the island was sucked into it. The Quimby's run and the Wayne county head of what is now known as the Little Sugar creek were directed to the axial channel around the head of the island, and their channels tell the story by their deep dippings into the silurian rocks.

The rivulets and creeks that formed the heads of all preglacial streams started from the rock with the dip of the rock and only marred the strike of the strata by erosion as they proceeded. The valleys in which the larger streams now run average—from rock summit to rock summit—about three-fourths of a mile, but the rock floor averages about one hundred and fifty to two hundred feet below the flood plain of the streams, the old channel being filled to that depth with drift over which the present streams meander from side to side like the wanderings of the old time snake, or even the present black ones near Overton.

This gives you a descriptive picture of the northeast face of this primitive island, the first dry land in the United States; but can you reproduce it in your minds? Can you contemplate it? The elements had been warring on its sides and summits for thousands of years. Its pinnacles were eaten by the winds as by acids. Its rocks were disintegrating. Its sides were scarred with deep gullies, like miniature canyons, by erosion as the floods carried the



Ceremonial Stones made from Black and Banded Slate. About one-half natural size.



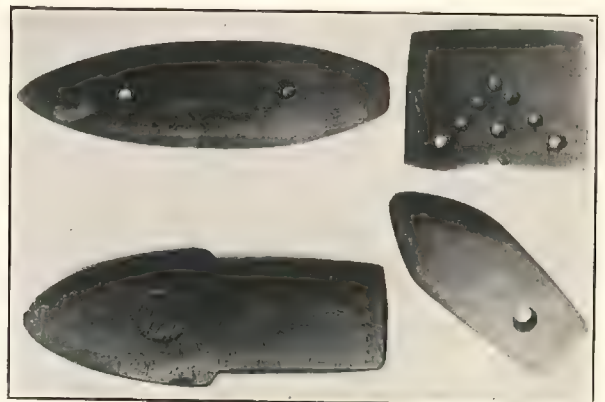
Types of Ungrooved Axes, or Celts, found in Wayne County. One-sixth natural size.



Symbol of the Sun, used in Sun-Worship, showing Points of Compass and Rays of Light. Made of fine Sandstone. Found in a Mound near Wooster. About one-half natural size. 1 inch thick, Face rounded.



Types of Grooved Axes found in Wayne County. One-sixth natural size.



Ceremonial Stones made from Black and Banded Slate. About one-half natural size.

degraded rocks to the sea. The island was an empire of silence save for the wild waves dashing against its scabrous sides; but there was no sense to feel and no ear to hear save God's. Desolation marked each nook and cranny. There was no motion or sound of any living thing, for the atmosphere was but a paste of carbon which no living beast nor creeping thing could breathe. And yet! here is the foundation upon which God built up the northwest half of Wayne county.

"The ways of the Maker are dark;
Who knows how God will bring them about?"

Professor Newbury again says, "A current from the south swept the eastern shore of our 'Ancient Atlantis,' that floated the trunks of tree ferns and branches of lepidodendron to Sandusky." The waters were warm in this Silurian sea and receiving the wild water from the island, with its load of de-grant rock, coupled with the difference of temperature, specific gravity and chemic composition refused to mingle and a current round the shore resulted, and this current gave the initial direction to the preglacial stream which we now denominate the Old Mohican, and which in after time carried not only the waters of the Waverly capped island, but of the virgin coal fields as well, exactly between them to the great channel in the bed of Lake Erie.

As previously stated, a fringe of the drainage from the crest of the continental divide south of West Salem was carried into the Muddy Fork of the Mohican. Now this stream follows a preglacial channel that drained the southeast face of the incline from Perrysburgh to Polk and Rowsburgh in Ashland county and passing between Rowsburgh in Ashland and Little Pittsburgh in Wayne county, it proceeded to the southwest corner of Chester township, where it entered Wayne county, and became a part and parcel of it. It then continued in a slightly irregular course southeast to near Blachleysville, on the bank of the Indian "Big Meadow" and the white man's "Big Prairie" in Plain township. Here it may have joined the large preglacial channel from Ashland, passing by Jeromesville to the village of Big Prairie, or Custaloga, on the Pittsburgh, Ft. Wayne and Chicago railroad, where it entered the axial channel from Loudonville, now known as the Old Mohican.

But there is another possible, if not probable, way which I will try to explain. The entire south front or mouth of the Big Prairie was blocked by glacial drift piled into hills hundreds of feet high which turned the waters of both the Jerome and Muddy forks of the Mohican back upon themselves, cre-

ating a lake three hundred feet deep and one to three miles wide from Shreve and Big Prairie to near Jeromesville.

Now through this lake-creating barrier a deep and wide preglacial channel has been discovered at the "Heller's Tavern" cross roads, about one mile east of the Camp Station on the Ashland & Wooster railroad and this channel continues to the old town of Millbrook and on across the D. Myres farm (section 6, Franklin township) and connects with the Old Mohican near Millbrook Station on the Pittsburg, Ft. Wayne & Chicago railroad.

This valley would have been followed by the Ashland & Wooster railroad to the Camp clay plant from Millbrook village instead of from Custaloga, had not the engineer informed the projectors that their track could not be maintained, for the waters of the Big Prairie would rush—in spring floods—into the half-mile cut they would have to make through the glacial barrier, thus creating a col through which the waters would not only flood the railroad, but probably turn the Muddy Fork of the Mohican into the Killbuck by Millbrook village, as the flood plain of the Big Prairie is over one hundred feet higher than the plain of the Killbuck.

The north end of this buried channel so nearly meets a projection of the Muddy Fork near Blachleysville across sections 29 and 31 of Plain township that I think it probable the preglacial Muddy fork had its continuance to the axial channel—the Old Mohican—by this route, leaving the Jerome Fork pass singly to some point between Shreve and Custaloga.

This completes my simple sketch of the northwest half of Wayne county's native rock formation and drainage lines and includes the townships of Congress, Chester, Plain, Clinton, Wooster, Wayne and Canaan; also parts of East Union, Green and Milton.

There was a long time of waiting for the other half of Wayne county to be created. The years are marked by the million, for the Alleghany mountains were yet under the sea, their picturesque peaks were only a dream in the plan of evolution, and even when they were up in the mist of the dense atmosphere, there was a still longer wait before the broad arm of the ocean fretting between our primitive island and the west Alleghanies gave way to the carboniferous flora that preceded the formation and building up of the Alleghany coal fields, with the seven veins of coal and the intervening strata of shale, sand and conglomerate that now form the hills and vales of northeastern Wayne county, and include the townships of Paint, Sugar Creek, Baughman, Chippewa, Salt Creek and Franklin, with parts of East Union, Green and Milton. Each of these is underlaid with coal, with occasional dove-tailing into the eroded channels of the Waverly.

Now that the rock foundation of half our county is completed, might it not be well to contemplate the structure and its surroundings while waiting the evolution of the other half and note the methods of the Maker and Keeper and Controller of the universe in His creation of a continent?

Let us place on a pinnacle of the rock which is now graced by Wooster University, a primitive man—a multi-millionaire (in years, not gold)—and push his “nature’s place” back in time a million years, but give him the sense of a troglodyte, for he must have a sentience sufficient to feel the moving of the spirit of God upon the waters around him and a perception of the spirit of development under his feet in the island, the first dry land in the United States, and which was then as a “babe in the womb,” but possessed of an indistinct uneasiness, waiting, but pulsing for the light that it might have life in the open. Time was not, for the sun was hid by the vapors surrounding the earth. The air was loaded with the heated earth’s distillate and in the earth was only a thrill like a shudder of “life in death” to give promise of a land plant that could live in this noxious air.

So only expectancy was beneath our millionaire’s feet and all that was before or behind him was the ocean.

“That glorious mirror where the Almighty’s form
Glasses itself in tempests.
That image of Eternity, from out whose slime
The monsters of the deep are made.”

This awfulness was his environment; while the desolate, naked crags of waverly sandstone, only relieved by the shrubless, lifeless, but soft expectant shale was beneath him in the island, which, like a chrysalis in its cocoon, was waiting for its carbon case to break, that light might come in, and with light life to the land plant.

I say expectant shale, because in the shales we find more of the active principles of life than in all other strata. Whatever clumsy name you give to the initial that the world’s Ordainer and the world’s Sustainer placed in the earth to fructify it,—“vis vita,” “primordial germ,” or “vital unit,”—I refer you to Genesis which says, “Whose seed is in itself upon the earth,” and geobiology says the shales are largely its keeper.

And these same shales dipped under the ocean, forming its bed, and furnished the first seaweed for the first animal life, while the laws governing this evolution gave the formula, or working agency, by which Omnipotence creates continents and develops life on their surfaces. Distinctly had these laws

been operating in the evolution of life in the waters, for the ocean was teeming with fishes which were early brought forth, receiving their food and oxygen from the water they could live in, when land plants could not.

But suddenly this monotony is broken and gives place to one of nature's creative convulsions. Our man on his pinnacle senses deep rumblings and dread tremblings. He is enveloped in lightnings and waves are dashed over him. The sea is rising and the island is tilting. It seems like the end of all things, but is only a second beginning, for when the catastrophe is over the ocean bed has taken the place of the sea. Virgin land is up for its first baptism in air. Nature's gestation is over and world has a new and added land with new aspirations and new potentialities. Evolution has a new field where we can study creative problems and note the factors and formula of development.

The surface of the new land is one of ooze and slime, entombing the mutilated bodies of fishes, and the salt of the sea is gathered into pools. But an age passes while the fresh waters from our island on the west and the Alleghanies is flooding the ooze and dissolving the salt and a dim light has entered through the vapors above, and our man on the mountain sees lichens clinging to the rocks, ferns and club mosses, and rushes growing between, while the lowest forms of animal life are feeding on the fronds in what is known as a coal marsh.

The coal plant must live and die in a swamp. For it must be covered with water or mud when it falls, or it will not be transformed into coal. Our multi-millionaire must wait thousands of years for this first cryptogamous forest to flourish and fade.

But the time comes at last, and, with another convulsion, the land with all its flora sinks from sight and the ocean is here again to receive the degradation of the hills on the east and on the west and spread them over this sunken virgin forest, that distillation may go on to purification and the forest be presented to the twentieth century as perfect coal, and denominated coal seam No. 1.

Another period passes with the sea dominant; but the flight of time is marked by change, and the bed of the sea is again inspired to rise, and on its breast and in its ooze to grow a new and completer coal forest, with higher orders of plant and animal life. So in the coals we find the fossil plants: the lepidodendron (the scaly tree), sometimes one hundred feet high and twelve feet in circumference; the beautiful sigillaria (the seal tree), the giant calamite, with hosts of lower forms of flowerless plants and these in such profusion that a coal forest represented a tropical jungle, in which insect life played a mysterious but conspicuous part.

These coal plants were the especial feature of the carboniferous age of the Mesozoic time; in fact, a necessity in its evolution and preparation for the future.

Plants are the only things that know how to manufacture living material out of inorganic mud; but plants do not take all their food from the earth, for they take up carbonic acid from the air through their leaves and decompose it, retain the carbon, and give off the oxygen.

Animal life takes up oxygen and gives off carbonic acid. Now during the carboniferous age the atmosphere was so charged with acid carbon that no animal could live in it if permanently out of the water, so these forests were inspired as a media to extract and lay up the carbon, and so utilize the destructive element to animal life, and lay it down in coal for the future use of man, for whose advent on earth the initial steps were being prepared.

Five times more this down of the ocean and up of the land was repeated. The new land with all its flora and fauna went down seven times, putting the forests to sleep in coal at each separate submergence and flattening the bones of primitive life to fossil, thus forming the seven veins of coal found in our Eastern hills.

Each time that the earth went down and the sea became master it brought immense loads of degraded rock that the wild waves had torn from the continent and dashed into sand and mud and spread them over its bottom; and these, with the ground-up corals and shells and pebbles rolled into marble forms, produced a new stratum between the coal seams and heightened the hills of our growing country.

As said above, seven times was it necessary for a forest to grow and appropriate the carbon in the air and lay it down in coal, to prepare a way for air-breathing animals to have a permanent home on its surface. In the last period of the coal formations the animal kingdom had greatly advanced. When the first coals were put down the forms of life were all of the water genera, but in the last we had a rich and varied terrestrial vegetation and many air-breathing animals, but there was a long lapse of time before the earth was fitted for the higher orders—the prelude to man. With the close of the carboniferous age, although our hills were completed and partially fitted for terrestrial vegetation, yet the upper factors of the Mesozoic aeon—the Triassic, Jurassic and Cretaceous ages—the ages of reptiles and birds, together with the Tertiary age, the age of mammals, was never represented in Ohio as in other parts of the world, for Ohio was out of the water and has so remained during all these ages. During all this vast period Wayne county was basking in a gradually developing sunshine, and growing immense forests and putting

the leaves and dead branches down in humus, that grasses might grow and flowering plants spring up and bloom, birds multiply and render the forests vocal, preparing the way for man's advent in the county, which was partially achieved when the hills were completed in the new half of Wayne county. This new half is made up of other stuff than the first and older half, for the University hill is a million, if not millions of years older than the Experiment Station hill; the former's rocks represent the Silurian and Devonian aeons of the world's organic history and present the earliest forms of perfect life in their fossils, while the latter shows all the varied forms of flowerless plants, from ferns to sigillaria, but no bird enlivened the scene. The hills of the new half are made up of coal and conglomerate, capped with sandstone and limestone, chert and iron ore, through Wayne and Holmes counties, making, with the waverly of the island, a bowl or hydrographic basin, shaped almost like a huge mussel shell. Its southwest end is found between Independence and Bellville in Richland county, and its axis is almost parallel with that of Lake Erie, and this axis followed the primordial current around the head of our Silurian island that carried the fresh water that flowed into the salt sea from the island, creating the "Newberry current" around the head of the "Incline" to the great northeast channel through the *initial* Lake Erie, and now, after the development of the coal measure hills, drains both the island and the virgin coal hills into a slightly curved channel passing distinctly from Loudonville to Sterling, and thence by Rocky river to Lake Erie, and now known as the Old Mohican, for in the ancient time all the branches of the Big Mohican drained northeast through this deep and wide waterway, running exactly between the base of the Silurian island and the carboniferous conglomerate.

The rock floor of this river—that no man ever saw—is at Loudonville, two hundred and sixty-two feet above Lake Erie; at the railroad bridge over the Lake Fork, two hundred and forty-five; at Odels Lake, two hundred and twenty-eight; at Big Prairie, two hundred and fourteen; at Custaloga, two hundred and ten; Shreve, two hundred; near Millbrook Station, one hundred and eighty-five, and one and a half miles south of Wooster, one hundred and forty-seven feet. At the Mock farm, section 6, East Union township, no rock was struck at one hundred and eighty-five feet. Well head three hundred and forty-five, which proves less than one hundred and sixty, but here we encounter mountains of drift, and no wells have been drilled into them, so the channel is obscured, but near Orrville it enters the great Orrville swamp, or lake, and through it the channel proceeds to Sterling, where is found four hundred and nine feet of drift and the rock floor many feet below the present

face of Lake Erie. From this you see the channel's decline from Loudonville to Sterling, and the Black Fork from Mansfield follows an old preglacial bed, having the same general decline to Loudonville, while the Jerome Fork from Ashland, the Muddy Fork from Rowsburgh, the Little Killbuck from West Salem and the reversed Killbuck from Millersburgh all show a similar descent into the axial channel—the Old Mohican. The continental divide leaves Richland county near Independence, passes irregularly through Holmes county to Chestnut ridge, between the Black and Wolf creeks, here crosses Killbuck and proceeds to the south of Baltic, Ragersville and Dundee, and connects with the divide noted by Frank Leverett as crossing the Big Sugar creek between Strausburgh and Canal Dover. So the rim of the elongated bowl commenced near Garden Isle in the "Harrisville Swamp," and included West Salem, Polk, Ashland, Mansfield, Bellville, Killbuck, Dundee, Massillon, Warwick and practically ended at the River Styx and the preglacial drainage lines from this crest of highest hills all converged to a central axis—the Old Mohican.

Those from the island side have been noted, and I will now briefly indicate the principal ones from the carboniferous side. The first on the west was a small channel coming in just south of Loudonville and draining the high hills of Hanover township; it is now crossed by the new bed of the Clear Fork. Drake's Valley, from Nashville to Lakeville, marks the line of the second. The third drained the limestone hills of Ripley township and entered the main waterway just west of Shreve. This takes us to the south exposure of the limestone ridge of Ripley township, and all its waters were directed by the dip of the rock to the Paint Valley channel, which started near Nashville and entered the Killbuck near Holmesville. The next and principal tributary is the great Killbuck channel, in which the waters are now reversed from the col at Killbuck village. This valley gradually widens and deepens until it enters the Old Mohican between Wooster and Shreve. The sixth channel is a smaller one, coming in between coal hills, two miles south of Millersburgh. The seventh comes in through a fissure between Holmesville and Holmes county infirmary. It is now occupied in part by Martin's creek. The channel is wide and two hundred feet deep. The eighth in order drained a large part of Salt Creek and Paint townships in both Wayne and Holmes counties, and the valley is probably of more importance to the people of Wayne county than all the others combined, for it furnishes a series of flowing wells of purest water. Its head is represented by Dry run, passing down a fissure between the hills southwest of the south branch of Salt creek, and ended in the Salt creek valley near the tile factory, below Freder-

icksburgh. At this point is located the col in the big Salt creek, and over this broken-down col the waters now go tearing over a rocky bed and between rock hills to Holmesville, where the debris is landed in beautiful terraces. From Fredericksburgh the old channel passed almost due north to old Edinburgh, where it was joined by a preglacial channel coming in from Kidron by Apple creek. It then took a northwest direction through the valley of the Apple creek to Honeytown, where it entered the Old Mohican. The ninth is the mysterious Big Sugar creek, a reversed stream, the col being near the falls below Beach City. The next is Newman's creek, that the Pittsburg, Fort Wayne & Chicago railroad follows from Massillon to Orrville. The eleventh is represented by Patton's lake, Fox lake and Red run. The twelfth is represented by Chippewa creek, now forming the west head of the Tuscarawas, which is known to be a reversed stream from near Strausburgh.

Here I must call your attention to a feature in the location of these preglacial channels that will assist you in determining the necessity of the axial channel or Old Mohican, and it will be better understood by referring to the accompanying map, viz.: All the channels described enter the axial channel through fissures or gorges in the hills that deepen and widen as they proceed from the hills to their mouths, and this explains the mystery of Sugar creek, Newman's creek and Chippewa creek, whose waters now trend out, but in preglacial times flowed in. Their mouths were filled with drift to a point above their source, and the streams of necessity reversed. Newman's creek, which now empties into the Tuscarawas near Massillon, is the remains of an old glacial marsh, with its widest end opening into the Old Mohican, and it seems plain that this "Shades of Death," as the pioneers called it, marks the line of a preglacial channel trending north and west. The Chippewa creek channel is, from a geological and glaciological standpoint, the most important of all, for it has been surmised that the Old Mohican went through this channel to Warwick, and then by the Copley marsh to the Cuyahoga, and thence to Lake Erie. My first objection to this is that I have found another and better way through which the waters could pass, and my second objection is based on geological and physical principles. The Chippewa creek channel passes over carboniferous conglomerate that contained a vein of coal, and here is a breach through a fissure in the hills which shows them to have been cut through, as with pick and shovel, which is not consistent with their formation, but which is in accord with a law of physics, viz.: Dammed-up waters will select the point of least resistance in seeking a lower level; and here was an immense lake bounded by hard and high hills, and as the lake



Miscellaneous Artefacts found in Wayne County.
One-sixth natural size.



Types of Ungrooved Axes, or Celts, found in Wayne County.
One-sixth natural size.



Sharks' Teeth, found in the Muck Swamps of Wayne County. About two-thirds natural size.



was still rising from the melting ice of the glacier's front, there must be found an outlet, and at last nature furnished it in two notches in the east hills, the one over Chippewa creek and the other over Newman's creek. Through these the rising waters rushed, disintegrating and transporting the obstructing material, until the two channels were formed that now constitute the west head of the Tuscarawas. In sections 26 and 25 of Chippewa township coal mines are operated by drift less than a mile apart and the veins are on the same level, with the creek between them. These veins were certainly united in preglacial times, and my firm belief is that the waters of the Old Mohican went from the Orrville lake across the Chippewa channel, receiving it as a tributary from section 26, through Chippewa Lake to Rocky river, and thence to the great preglacial river or channel in Lake Erie.

GLACIATION IN WAYNE COUNTY.

In calling attention to the influences of the glaciers—for there were several stages, each with an advance and retreat—I direct your minds to the agencies God made use of to beautify and bring more complete "seed time and harvest" to Ohio's Eden—Wayne county.

I will not speculate on the many theories that have been brought forth to account for the glaciers' formation and coming; will simply say they are confined to two principal schools, first, that dependent on the procession of the equinoxes, which is supposed to induce alternates of intense cold and tropical heat twice in twenty-one thousand years; second, the annular theory, which presupposes that the earth, in its earliest history, was surrounded with belts or rings, as Saturn is now, and that these belts of dense vapor shut out the direct light of the sun and so induced an even, warm temperature, as in a hothouse, from pole to pole, allowing the huge mammoth to roam amid giant palms up to the Arctic circle. That these belts—the distillate of the earth's furnace—successively came within the earth's attraction and fell to the earth; the heaviest first; the carbons that gave nourishment to our coal forests. Later, and finally, the dense aqueous vapors, which by the earth's rotation were carried to the poles and fell as snow, to be converted into ice, which we call a glacier, and which must move through its own weight. My sympathies combine the two as causes. What we do know positively is that a broad sheet of ice, many thousands of feet thick, formed in the north and moved south toward the equator, tearing off the tops of the Canadian highlands in its progress, and carrying a part of its load to Ohio, where, by the sun's heat, the ice was melted and its grist deposited in the form of drift and silt and

till. This high mountain of ice, calculated by some to be eleven thousand feet in thickness, with gravity pulling and some inherent mysterious force propelling it, crept slowly south, having no respect for the igneous rocks of Canada, but leveled the ledges of her Laurentian hills, tore the pinnacles to pieces and took up and incorporated the product as a part and parcel of itself. As it proceeded south the sun's heat commenced its disintegration, and great rivers were formed on its top, over its front and underneath it. And in these rivers were rolled the angular blocks of Canadian granite, until they were rounded into boulders or "nigger heads" and cobblestones, to be deposited on Wayne county by the million. Nor was this all, for "though the mills of the gods grind slowly, yet they grind exceeding small"; so the softer material, as shales, was ground to powder, and the crushed fragments of quartz, feldspar and hornblend were rolled into pebbles and deposited as boulders, clays and gravels. After leaving Canada with its load of granite and gravel, the line of direction of the glacier in its advance was largely determined, over what is now Lake Erie, by the deep and wide channel of a preglacial river, called by Newberry, in his geological report, Erie river, a river which "no man ever saw."

This river was largely made up of the great volumes of water pouring from the Old Mohican through Rocky river and through the equally deep channel of the Cuyahoga, supplemented by the flood from Black river and that from the drainage channels of the entire watershed of the south end of the lake. All these channels are supposed to have converged into one, forming the "Erie river," and its channel formed a path or mould for the viscous moving body of ice to follow in its advance, paralleling what is now Lake Erie. That such a mould will modify the course of the ice, I refer you to Professor G. F. Wright's "Ice Age in North America," page 335. When the glacier had passed from the soft shale, where it had plowed out a bed for Lake Erie to lie in, and had shaped and grooved the hard limestone for the islands near Sandusky, it met in its progress a barrier of massive and resistant limestone and waterlime, capped with firm waverly, gradually rising to a height of eight hundred feet above the bottom of the lake, constituting the southeast watershed of Lake Erie. This obstacle had to be overcome or compromised with, for there is nothing to stop such a moving mass of polar ice in its advance, *save solar heat*. Ice is commonly looked upon as a solid, and a child has said, "Ice is water asleep," but ice is not a solid, and if asleep, it is somnambulistic, and walks in its sleep. Ice is no more a solid than honey, or lava, for its molecules move upon each other from some mysterious cause, aside from gravitation, inducing change of form and position, and

here it must have acted against gravity, for the glacier crept on and up the obstructing mountain, crushed its strata, deepened its ravines, scored its rocks, as a plane grooves wood, and left its "hall marks" as striae on the hill-sides. Reaching the rocky summit, it seemed to hesitate before smoothing the crags of waverly and dropped part of its load with its heaviest boulders on the north edge of the hill, and so changed the line of highest hills constituting the continental divide. It then passed on in nearly a direct line south as far as Newark in Licking county. A moving viscous body, meeting an obstruction that reacts against gravity, will, by a law of physics, manifest increased lateral pressure, and bulge, and the bulging will be in the line of least resistance. Now, at a point northeast of the resisting hills on the lake front, just where we would expect the reaction against gravity to be greatest, we find a low col made up of the basin of the Cuyahoga river, four and one-half miles wide, and the gorge of the Rocky river, three miles wide and only seven miles of hills between them—fourteen and one-half miles of space and seven and one-half miles of it open to below the lake's bottom. And this, supplemented by the wide mouth of Black river as a lateral, and, centrally, the channel of the Old Mohican to direct the bulb. Would it be in reason to suppose that nature would violate her own laws, reject the physical invitation and not send a lobe into the mouths of these hungry rivers? She did accept the challenge and projected a lobule into the fissure. In proof, I direct you to the present extension of glacial tongues in Alaska, which generally follow this law, and to Professor Wright's "Ice Age in North America," pages 174 to 235, demonstrated and recorded striae on the rocks, which on the hills of Summit county are directed southwest, and on the waverly of Ashland and Richland counties the scorings are directed southeast, and these scorings, if projected, would meet in the Old Mohican. The moraines are also in proof of this, for the terminals are deepest on the sides where the embarrassing hills modified the laterals, but did not prevent a marked central moraine for ten miles below Wooster, as well as to the north, and a silting of the lower reaches to Millersburgh. This valley of the Old Mohican and Killbuck furnished the groove of direction, with only gently curved variation from a right line across Medina and Wayne counties to Millersburgh, in Holmes county, where there is a more marked curve of the valley to the west, ending at the col near Killbuck Village. The width of this lobule of the glacier extended from Canton, in Stark, to Loudonville, in Ashland county, and the lobe was arrested or ended just before reaching the continental divide of the coal measures. It was stranded as a semicircle, its front presenting as a bent bow, which a little more than subtends the south front

of Wayne county; the bow string is about thirty miles long from Canton to Loudonville, while its central projection from this line is about eight miles, extending to below Millersburgh, with the Killbuck channel as a fixed arrow in the bent bow. On the outside of this bow from Dundee, in Tuscarawas, to near Brinkhaven, in Holmes county, where the north and south divide crosses the Cleveland, Akron & Columbus railroad, the landscape is the most picturesque in this section of Ohio, made so by the ravines of erosion created by the rushing waters of the melting ice, and the great masses of stone broken from the arresting hills and tumbled into the valleys. Near Dundee, blocks that I have measured are twenty-five by fifteen by six feet above ground, and how far below no one can tell, and any one who has traveled on the Cleveland, Akron & Columbus railroad from Millersburgh to Mount Vernon has wondered at the multitude and magnitude of the surface rocks along the track, especially near Glenmont, many looking like small houses, while the smaller ones render the ground untillable; and all these rocks were torn from the tops of the immediate hills by the force of the glacier just as its power of progress was spent, or arrested by the sun's rays. This lobe of the glacier seems to have been detached from the main body just where the coal measures end below Loudonville, for the main mountain of ice slid on south over the smoother face of the waverly that skirts the coal measures to below Newark before it was deflected, a distance of forty miles. Now, it was this arrested lobe of the glacier that brought the load of material that changed the entire topography of the hydrographic basin described in this paper, from Cleveland to Millersburgh and from Massillon to Mansfield. But particularly in Wayne county was its burden of "Life in Death" put down, giving a new physiognomy and a new physiology to the landscape. The remodeled features of this perspective scene, with its fresh expression, made the face of this valley a thing of beauty to the eye and a blessing to agricultural interests. The angular hills and gorge-like valleys were rounded up into gentle swells and smoothed out into graceful undulations, and the food of the glacial grist was so disposed, digested and fitted for assimilation that hill and dale rejoiced in verdure unsurpassed, and there was left as our inheritance as fine a grazing and wheat growing section as the sun shines on. But our old waterways were obliterated, filled with drift hundreds of feet above their holding, and new drainage channels must be created, a few of which, together with their mode of formation, I will attempt to describe. The Clear Fork of the Mohican followed, in part, the old channel to near Perrysville, but was here obstructed in its course to the Black Fork gorge by drift, the obliterated channel being now distinguished by two small lakes or kettle holes between the high gravel knolls that turned the waters.

The deflected stream then cut a new channel southeast to the Mohican, its newness being demonstrated by numerous falls, the most picturesque being Lyons Falls, where the stream cuts down into the crumbling red sandstone of the waverly immediately below the carboniferous conglomerate of an outlying coal hill, revealing many beautiful casts of fossil. The Black Fork was blocked by moraine material where the Killbuck lobe of the glacier became fixed on the Loudonville hills, and its entire old channel—the Old Mohican—was filled to an insurmountable height with drift. But the pent-up waters formed a notch or low col in the hills one mile south of the village of Loudonville, where the diverted Clear Fork rejoined it, and, uniting their forces, cut a narrow gorge through hills that now stand four hundred and twenty-five feet above the rock-bottomed and rock-banked Mohican. Here a mountain of sandstone and shale was cut in two, as you would cut a loaf of bread. The next new stream starts between Funk and Tylertown, where, because the old channel in the Big Prairie was walled up by a glacial dam three hundred feet high, creating the lake noted above, from Custaloga to Jeromesville, the Muddy and Jerome forks of the Mohican were compelled to mingle their waters and tear down a low breach in the north and south divide near Fort Tyler into a gorge two hundred feet deep and three miles long to gain, at Rochester Mill, a preglacial channel coming down from Mohicanville. Another glacial or post-glacial stream was created east of Orrville from the Newman's creek swamp to the Tuscarawas at Massillon, when the pent-up waters of the Orrville lake, whose flood plain was high as the surrounding hills—cut a narrow channel through a fissure in the coal hills and so reversed a preglacial stream, sending its water up the hill instead of down; the immense morainic hills on the south held the waters of the melting glacier above, until sediment accumulated as high or higher than the gorge when they cut through the carboniferous divide to the Tuscarawas at Massillon, the stream bed here being fifty feet higher than that of Killbuck.

The Chippewa creek, which was the northern outlet of the great lake extending from near Orrville to above Chippewa lake in Medina county and across to near Smithville and Creston, cut a channel through the carboniferous conglomerate to a lower level and now forms the west head of the Tuscarawas river.

The Old Killbuck, which headed in Wayne township, was diverted by the moraine at Creston and cut a channel seven miles long to Burbank, from whence it found an outlet up the channel of the preglacial Black river to the divide near Overton, and here it cut its way to the present Killbuck.

LAKES AND SWAMPS.

The topography of Wayne county is rendered distinctly picturesque by the location of its lakes and swamps, and in this, as in all other descriptions, I include the area bounded by the surveys and acts of the General Assembly of Ohio in the year 1808. This extended the south line of the county to the Greenville treaty line, and the west line to include one tier of townships in Ashland county. This becomes an absolute necessity in presenting a topographic picture, for the escarpments of Holmes and the rivulets and creeks that form the heads of the two Mohicans, the Adamic father and mother of the Big Prairie, are but parts of one great whole.

All the lakes of the county, both open and silted up, are found to have their centers in preglacial gorges and their lateral margins are the rock banks of the preglacial streams, covered light or heavy by glacial drift. They are mostly confined to the eroded channels of the Devonian island and the channel of the Old Mohican, which runs exactly between the island and rock hills of the carboniferous. Odel's lake and Chippewa lake are examples of the latter, while Greenlee's, Marthy's, Round and Long lakes, in Lake township, Ashland county, form a chain marking a preglacial channel from Mohicanville to near Lakeville, where it entered the channel of the Old Mohican. Brown's lake and Manly's lake, though the former is very deep and fast closing over with turf, are simply kettle holes in the moraine where large masses of ice have become detached from the retreating glacier's front and so covered with gravel and sand that the sun could not melt them for centuries, but finally the sun was supreme—the gravel covering went to the bottom and the lakes were formed.

Fox lake and Patton's lake are located in the gorge that was drainage channel for the coal hills of eastern Baughman township; and there is much evidence that Fox lake is an immense artesian well. The waters flowing from the hills into the Tamarack swamp, through the preglacial channel noted above, into Patton's lake, and from here, in an undercurrent, to Fox lake, on the north side of which is found impenetrable morainic material, and the obstructed water rises through a gravel vent as it would through a drill hole. This would correspond to the great flowing wells near Sterling, those at Fredericksburg and Apple Creek, and especially those along the Sugar creek in East Union township—in fact, all the flowing wells of the county are in such channels. The silted-up lakes spoken of above were, to the pioneer, *impenetrable swamps*, but many are now drained, and so converted into our most fertile plains, the principal ones being the Big Prairie.

Killbuck Bottoms and the onion fields around Sterling and Creston. For centuries a rank vegetation grew on them, which falling each year and chemically and physically mixing with the silt of the glacier and wash of the hills, produces an inexhaustible soil, the richest in the county. There were many morainic islands in the swamp lakes which stood above the waters of even the spring floods, and bore a harvest of finest forest trees and verdure unsurpassed.

But the silting up of the lakes was not all; this gift of nature's God was smoothly spread over every inch of Wayne county's surface; the old channels of erosion were filled beyond their holdings, in many of them the drift is over two hundred feet in depth, and near Sterling in the channel of the Old Mohican we find it four hundred and nine feet, in the Big Prairie the silt and drift and till measures one hundred and seventy-two feet, and Killbuck valley shows one hundred and eighty-four feet. The angular hills and ragged valleys were rounded into graceful swells and undulations; there is not an angular nor jagged hilltop in the county, but all are domelike in their contour, with gently declining sides that enter peaceful valleys. The islands in these old lakes furnished cover for a great variety of wild animals, some fierce, some fowl, but most of them the delight of the hunter and the joy of his wife and children when he could bring them home, and his wife set them steaming on the table. The elk and the deer, the bear and the panther, the wildcat and the wolf, the fox and the raccoon, the porcupine and the rabbit, made a forest family, with the pheasant and wild turkey, the quail and the woodcock, but the birds of prey were also here, the bald eagle and fish hawk, the buzzard and chicken hawk feasted where they could, and the rattlesnake and copperhead lay in wait for the unwary. In the waters were found the beaver and the otter, the mink and the muskrat, and the finest fish for their food, and over the meadows that skirted the hills and surrounded the swamps the turf was trod into paths by the buffalo and pierced by the pointed hoof of the deer. Christopher Gist, in his travels for the Ohio Land Company in 1750 and 1751 and later in 1753, when he accompanied General Washington (then Major) in an exploring trip through Ohio, mentions large herds of bison, thirty and forty in a drove, along the Walhonding and Mohican, and my old-time friend, "old Tom" Culbertson, had seven skulls of buffalo on his porch near Millbrook, found on the farm of D. Myers, one mile east of Millbrook village. But when numbers of wild game is considered, we must look to the ducks and geese and swans that stopped along in their migrations to frolic in the waters and feast on the bordering vegetation. To say the ducks were by the million, the geese by the thousand and the swans by the hundred is

telling a truth with much modesty, for at times the sky would be obscured when they were lighting on or rising from the water. And the low thunder of their wings on the wind was a wonder, while their quacking was a whole Fourth of July with Chinese crackers. But the crown for numbers must be given to the passenger pigeon, whose habit was to feast in the daytime on the acorns of the "Pocock Woods" and at night go to the alderbushes of the swamp to sleep (the Pocock woods was a solid body of oak timberland of one thousand acres, with many associate tracts).

The best way I can illustrate "numbers" will be by relating my experience in the fall of 1849, when, as a boy, I went with A. Call and J. Allerman, one night, to get a "mess of pigeons." We repaired to the alder swamp half a mile south of Millbrook, Call with a torch and I with a bag. When a rod in the swamp, we stopped, and while Call held the torch and the tip end of an alder branch to keep it steady and from flying up, Allerman picked off the birds, pinched their heads and dropped them into the bag, which I held open. The birds from five branches filled the bag, a large gunny sack with a wide mouth. The branches were bent half to the ground by the weight, and the birds were so blinded and dazed by the light that they could not fly. Even as late as 1862 a man by name of Schamp, living near "Sharp's Bridge," had a large net, in which he caught immense numbers, enticing the birds to his place by "stool pigeons," surrounded by food, then throwing the net over them. Many a morning I saw him drive into Shreve with a two-horse wagonbed full to the cover. He would sell them for twenty-five cents a dozen or a "shilling" if he could get no more, at Wooster. And yet the Killbuck swamp was not the only remarkable pigeon roost, for in a paper by Professor G. F. Wright, of Oberlin, describing a visit to Lodi and the "Harrisville swamp" (now the great celery farm north of Burbank), and which is almost a part of Wayne county, for its drainage to the south is into the Killbuck, says: "This swamp furnished one of the most famous pigeon roosts in the country, or, indeed, in the world. I trust some of the older people of Lodi will collect together and write for the benefit of the world and future generations the facts concerning this roost. I am told that in early times, when the pigeons gathered to their resting place toward night, or flew away in the early morning, the heavens were darkened as by a cloud and the noise of their wings resembled that of a strong wind in the treetops of a pine forest. It is said that after dark one had but to go to the edge of the bushes and startle the sleeping birds so that they should fly into the air, when he could kill them in almost any quantities by throwing a stick upwards at random. The birds must have been reckoned by the million. A company was



Totems, or Tribal Symbols. About three-fifths natural size.



formed in New York City to capture them in immense quantities for the New York market. * * * It is one of those remarkable phenomena which will pass out of the knowledge of the world, unless the facts are soon collected and put on record."

We think this a fitting place to briefly record them. The detail of their coming and going will never be written, and, if written, could not be understood by the generations to come, for the passenger pigeon is gone forever. A late notice in the papers offers three hundred dollars for a single pair, hoping that in some wild region a pair may still be found. They are, like the bison, the bear, the elk and the deer, and the associate Indian, together with all the "wild things of the swamps," lost eternally to Wayne county, in the evolution of the white man's brain, and the contemplation of it prompts the old inhabitant to say:

"I feel like one who treads alone
Some banquet hall deserted,
Whose friends have fled, whose loves are dead,
And all but me departed."

HUMAN RELICS IN THE DRIFT OF WAYNE COUNTY.

The question whether or not man existed in North America during any part of the great ice age has during the past few years attracted an unusual amount of attention and awakened not a little controversy. It is not one that can be easily solved. Evidence comes in slowly, and the cases not absolutely conclusive. Indeed, it is this fact that gives ground for the controversy. So many elements of uncertainty gather round the problem that to eliminate them all from every investigation is at present impossible, and the conclusion in each case rendered to that degree indeterminate. But despite this difficulty, we must recollect that in many previous cases anthropologists have been guided by cumulative evidence and it would be in the highest degree illogical to deny it value in scientific investigation. The accumulation of a number of cases, each in itself falling short of absolute proof, may yet render the acceptance of their common conclusion more rational than its rejection, especially in the absence of any rebutting argument or position. By such methods of reasoning did the glacial theory finally supplant the diluvial, and by like means has the iceberg hypothesis slowly yielded to that of the more widely extended sheet of land ice. Indeed, it is not too much to say that every doctrine in natural science, even the most

widely accepted and firmly believed, rests at bottom on this—that it is more rational to admit than to deny.

It is, consequently, of great importance that every fact that even seemingly connects man with the ice age in North America should be made known. That the evidence which it furnishes should be strictly and severely examined and the exact value ascertained, since only by the multiplication of such instances can the desired accumulation be obtained. Acting in accordance with the above belief and because I know the artifact to be an honest find, I present a stone, called the "moccasin last stone," in connection with a mass of the cementive gravel in which it was found. The accompanying engraving is an exact representation of the stone, and I put it forward for the honest criticism of anthropologists and archaeologists. It must stand on its own merits, and will probably commend itself with different degrees of credibility and force to different readers, according to their mental bias and their perspective view of its different elements.

The facts of the finding are as follows: In the spring of 1894 workmen were engaged in hauling road material from a bank or hill of glacial gravel on the bank of the Killbuck. The bank was near the Killbuck bridge on the Columbus road, one mile southwest of Wooster, Ohio. Running through the bank, as is not seldom the case in similar material, was a layer of conglomerate formed by the infiltration of carbonate of lime, or iron oxide, or both, from the upper part of the mass. During the work one of the men, Marion McCoy, stuck his pick into this layer and threw down a small mass, which in falling broke up and disclosed to the shoveler, Simon Bender, the stone above mentioned, "a petrified human foot," as the finder called it. The stone now, when placed in an Indian moccasin, fits it as accurately as a shoemaker's last does a boot, hence the name "moccasin-last stone." A further description of the finding of the stone will be better illustrated and understood by reading the affidavits of two of the workmen, J. H. Fraim, the director, and S. Bender, the finder (I have similar affidavits from each of the workmen, particularly F. Bierley), which I here insert. It will be noticed that they say the soil and some "gravel had been removed from the top."

"State of Ohio,

"Wayne County, ss:

"Personally appeared before me the undersigned, Simon Bender, who by me being duly sworn according to law, deposes and says: That about May, 1894, I was loading gravel at the Frederick Bierley gravel bank, just southeast of Wooster, when some digger (I think Marion McCoy) was bringing

down gravel for me to shovel. The part of the bank from which we were loading was a wide band where the stones were all stuck together by some stuff that had run between them, and this layer was about fifteen to seventeen feet below the surface of the hill and had to be broken apart with a pick. While the man with the pick (I think McCoy) threw down a small bunch of this it broke apart by falling and revealed the stone now before me and which I afterward sold to Dr. Todd. I picked it up and knocked off the stones that were sticking to it and showed it to the men present, viz.: F. Bierley, Jacob Kester, Jacob Fraim, Marion McCoy and others. I and some others thought it an Indian foot turned to stone, but the toes were not there. I do not know the width of the layer of stone that was stuck together, but I do know that this stone came from about the middle of it, and that the layer was fifteen or sixteen feet from the surface of the hill. I took the stone to one side, but J. Fraim wanted it, and he took it and wrapped it in his coat, laid it in another place, but I kept an eye on him, and saw where he put it, and when work was done I went and got and took it home with me where I tried to further clean it by knocking off all the pebbles that were sticking to it. I also rubbed it with another stone to smooth off the sticky stuff so it would be fit to sell, but I could not get it all off and I then took it to Doctor Todd and sold it to him for twenty-five cents. The stone could not have fallen in from any other place, for it was in the stones that were stuck together, and no one had it to change it before I sold it to Doctor Todd.

"SIMON A. BENDER.

"Sworn to and subscribed before me this 10th day of December, A. D. 1897.

CHARLES C. JONES,

"Deputy Clerk Probate Court, Wayne County, Ohio."

"State of Ohio,

"Wayne County, ss:

"Personally appeared before me the undersigned, Josiah H. Fraim, who being by me first duly sworn according to law, deposes and says, that I was present at Frederick Bierley's gravel bank when the stone now before me and belonging to Doctor J. H. Todd, known as the 'moccasin last stone,' was found. We were hauling gravel from the bank to the road in the spring of 1894. The bank is about twenty-three or more feet from where the wagon stood to the top. We were working from the face at the bottom. There is a thick layer running through the bank where all the stones are cemented firmly together, that is called 'conglomerate' by Doctor Todd. This layer is about eighteen feet from the surface of the hill. While one of the workmen

was throwing down this layer with a pick, he detached a small mass of cemented stones which broke apart when it fell and showed the stone above mentioned. Some one picked it up and knocked the other stones from it; we then all looked at it, and Mr. McCoy handed it to me and I wrapped it in my coat and laid it away to put in my collection, but when I went for it some one had taken it. I afterwards learned it was Simon Bender. I know the stone came from the conglomerate layer and could not have fallen from the surface, for there were still many small pieces of gravel and much cement sticking to it. As to the depth from the surface at which the stone was found, I did not measure it, but thought it was eighteen feet, and I have since looked at the bank and am now confirmed in the opinion. Another point is that soil and some gravel had been taken from the surface at some previous time, so now no grass grows on it. The amount of this, if known, would add to the depth of the stone.

JOSIAH H. FRAIM.

"Sworn to and subscribed before me this the 27th day of November,
A. D. 1897.

CHARLES C. JONES,

"Deputy Clerk of the Probate Court, Wayne County, Ohio."

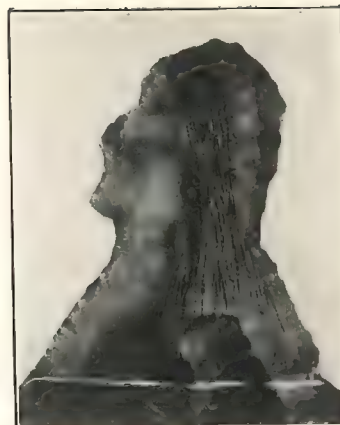
I personally know this to be true, for over sixty years ago I lived with my father one-quarter mile from the hill and saw them hauling gravel from the top, and I know this was continued at intervals to complete the road across the bottom, this being the only coarse gravel available. How much was taken from the top is only conjecture, but I measured from the present surface to the point where the stone was found, and it proved to be seventeen feet.

GEOLOGY OF THE DISTRICT.

The Killbuck flows in one of the preglacial valleys of Wayne county, which here is three-fourths of a mile wide and is filled to the depth of one hundred and eighty-four feet by wash from the north. Its general direction is nearly along the meridian. Near Wooster the Apple creek comes in from the northeast, and has pushed the Killbuck over to the western side of the valley, where it is cutting into the shale that forms the walls of its channel in a few places, though for the most part its banks show only the rounded undulating topography of the glacial hills. Through this gravel overlying the shale many years ago a wagon road was cut from east to west, crossing the Killbuck, and since that time gravel has been taken from it, first from the top, then from the side, for road making, so that a considerable excavation now exists. The top of the bank was originally over forty feet above the



First Mill erected by White Man in Wayne County. Made from a Huge Boulder, and located on the Muddy Fork, about 1809.



Sculptured Indian Head, made of Translucent Flint. Finely specialized by chipping. About twice natural size. Found by Author near Wooster.



Pre- or Inter-Glacial Pestle, the so-called "Moccasin Last", found in Undisturbed Glacial Gravel 17 feet below the Surface. Much reduced—bare shows the gravel.



water of the Killbuck, and the gravel excavated shows from twenty-three to twenty-five feet of nearly perpendicular face. The bed consists of unstratified material of various sizes, from stones weighing about two pounds down to sand, and the bed of conglomerate above referred to is about four to six feet in thickness and traverses the hill horizontally, and is composed of similar materials. Beyond all question, the hill is one of the morainic mounds deposited by the Killbuck lobe of the glacier during its retreat. And there is not the slightest ground for supposing that it has been disturbed or in any way moved since its deposition. The Killbuck has never since the ice age been at a level measurably higher than it is today. All the above geological facts were confirmed by the late Professor Claypole, a geologist and archaeologist of wide reputation, then of Buchtel College, Akron, Ohio, who ten years ago examined the locality and the stone, pronouncing the stone a genuine prehistoric relic, confirmed the above geology and advised the publication of the finding.

DESCRIPTION OF THE STONE.

First look at the picture and know that the material is a moderately fine sandstone, greenish yellow in color, such as is abundant in the drift of the region, and calls for no particular notice or comment. The "foot" measures eight and one-half inches in length by three inches and two and one-half inches in other directions, and so fairly resembles a last that the finder's name for it may well be allowed to pass. But the noteworthy fact, and the one which justifies the full detail here attempted, is that the stone *bears evident traces of human handiwork* and use. At the flat end it shows signs of having served the purpose of a pestle or muller for grinding or pounding, and over most of its surface, especially at and about the thinner end, it is covered with the pits or pick marks usually seen on worked stones of this nature, such as greenstone axes, celts, etc. Had it been found in usual circumstances, any collector would unhesitatingly have put it into his cabinet as a common Indian or prehistoric pestle, but the depth at which it was found, seventeen feet from present surface and probably twenty to twenty-four below original surface, and the peculiar details of its discovery, invest it with a new and special interest in the eyes of the archaeologist.

CONCLUSION.

The following inferences seem to be legitimate from the data already given and upon others to be mentioned below :

First. The stone is a relic of human workmanship. Its flat end bears all usual signs of having been used as a muller or pestle such as are common among the prehistoric remains of the county. Its opposite end is covered with the pick marks found in stones that have been wrought by human hands. These pick marks, though most abundant at the rounded end, are visible over most of the surface except on the flat end, which is smoothed, as is usual in these pestles.

Second. Being found in the glacial gravel and at the depth mentioned above, seventeen feet, it is not rational to urge its subsequent introduction by accident or design. The depth is too great for tree roots or burrowing animals or cracks; no trees are growing on the spot, nor is the gravelly soil of such a nature as to allow deep cracks, while the cement holds the stones together. A large block, twelve by eighteen inches, that fell with the stone has lain in my yard since 1894, exposed to the weather, and but few pebbles have fallen from it.

Third. In further proof of the above inference is the fact that it came from the bed of conglomerate in the drift, and was so firmly cemented to other pebbles lying with it that the workmen who found it had trouble in breaking them from it, and Bender could not scour off the cement with another stone. The position and depth of the conglomerate in the banks being ascertained, all doubts regarding the position of the stone are necessarily removed.

Fourth. Further, in consideration of the above facts, it is impossible to doubt that the stone is of the same age as the other materials of the conglomerate; that it was buried at the same time; that it has been subject to the same influences. In fact, that it is an integral part of the conglomerate as much as the other stones composing the same.

Fifth. One more possible objection must be noticed, as it can be met by a fact. It may be said that the marks on the stone are recent and have been made since it was found. Setting aside the distinct and positive testimony of the finders, as given in their affidavits, already quoted, we may add that close examination discloses the fact that the *stalagmitic encrustation still remaining fills many of the pick marks in the stone*, proving that it is of later date. Very fortunately, the well-meant, but ill-judged, efforts of the finder to "clean" the specimen was only partly successful, and the concretionary cement still thickly covers a great part of the surface. It would be much more satisfactory, no doubt, if the whole mass had remained as it was found, but we may be glad that the evidence was not entirely destroyed, as has been done with not a few archaeological relics of very great scientific value when they

were found, but ruined by too much zeal and too little knowledge in their finder. On the whole, it seems difficult to avoid the conclusion that we have here another indication of human existence in northern Ohio while yet the ice of the glacial era was present in the state.

Reviewing the evidence herein presented, it seems logical to conclude that this stone was an implement of domestic use, lost by its owner, and buried by a glacial stream in the gravel of the Killbuck valley, where it lay undisturbed until exhumed as above related. At all events, the evidence, as we have been able to obtain it, is here presented in detail, and it must remain for archaeologists to weigh it and come to their own conclusions regarding its final value. If the inferences above given are valid they will before long be strengthened by others of the same kind. The problem will then reach its ultimate and complete solution.

OTHER EVIDENCES.

Elsewhere will be found photographs of two stones found in the drift and now in my possession. The larger one is from a glacial drift hill twenty-five feet high on its cut face. The hill is similar in every particular to the one above noted, save that the cemented conglomerate is not so completely stratified. The hill is on the opposite side of the Killbuck, one and one-half miles higher up the creek, where the Baltimore & Ohio railroad cut through it when grading the road, and I feel certain that the gravel was never disturbed before this cut was made. Several years ago, when workmen were taking out gravel for ballast from the lower face of the hill, this stone was dislodged and picked up by myself from the torn-down gravels, so I can not exactly locate its position, but the workmen were taking gravel from a space from sixteen to twenty feet below the surface of the hill. In form it is a characteristic "turtle back" and is well chipped. Examine it and consider its value.

The second and smaller stone, resembling a rude tomahawk, was found in a washout in the drift on a hill almost directly opposite the first hill described. The top of this hill has for nearly a century been plowed "down hill" and so its surface greatly lowered. The hill is composed of imperfectly stratified gravel and yellow clay. During a spring thaw and flood a gully some six feet deep was formed in the side of the hill, and from the yellow clay near the bottom of this gully I picked the stone, the clay firmly adhering to it, and I am satisfied that it was taken from undisturbed glacial clay. That it shows distinct marks of human workmanship, no one seeing

it can dispute, and I present it, in connection with the above, as one more evidence of man's association with the glacier's retreat in Wayne county, Ohio.

ANIMAL REMAINS FOUND IN THE MUCK SWAMPS.

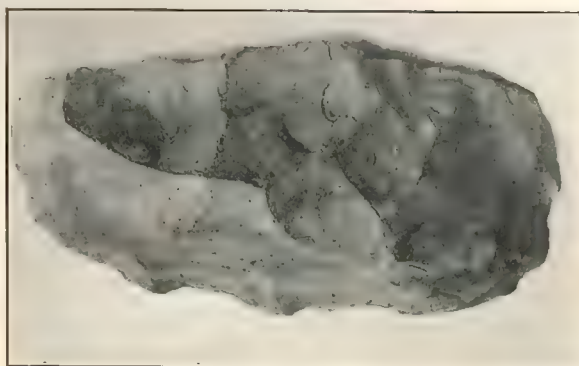
The first is a mammoth's tooth, the last molar of the under jaw of the left side; it weighs four and one-half pounds, although part of the fang is lost by decay. It is known to be a mammoth's tooth by the cross lines of hard enamel with softer dentine between. It represents an extinct species of elephant, the "*Elephas primigenius*," the ancestor of the Indian elephant, and was covered with a shaggy coat of bristles, long hair and wool. It was contemporary with man during and after the glacial period in Europe. The tooth was found in the filled-up glacial lake on the Brownfield farm, northeast of Fredericksburgh, Ohio. The lake is in an old preglacial channel and in its center is an old morainic island, on which was a late Indian village, furnishing many relics. In a spring freshet the north branch of Salt creek washed into this swamp, tearing down the muck and with it the tooth which the engraving represents. It was found when the water subsided by Mr. John Livingston, who brought it to me. The tooth was found only seven miles from the swamp (of similar character) in which was found the immense skeleton of the giant sloth—*Megalonyx Jeffersonii*—by my old friend, Mr. Abraham Drushell, and which is now placed in Orton Hall of the Ohio State University, the only such skeleton mounted in the world.

The next specimen was found when driving a sewer through a glacial kame in front of my house in Wooster, Ohio. The specimen was found fifteen feet down from the original surface of the soil, lying between layers of blue boulders, clay and yellow Cleveland clay. It is five and one-half inches long and one and one-quarter inches in its greatest diameter, with a peculiar articulation at its distal end, such as is found in the cat tribe, where the claw rolls on the bone, and can be sheathed. I regard it as the last phalynx of the central toe of the extinct saber-toothed lion. It can not be represented on paper, but I note it here because the lion was contemporary with the mammoth and man in Europe, and may have been in America in glacial time, and I make this point for Wayne county, Ohio—that when such animals could live, man could live.

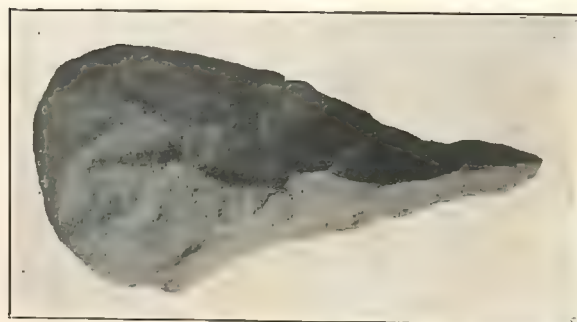
The next find is the shark's teeth, represented in the engraving. The teeth are from the man-eating shark (genus *Carcharinus*), which lived in a warm sea and grew to fifteen to twenty-five feet in length. The large tooth, associate with one on the card from South Carolina, was found in the muck



Tooth of Mammoth, Weight $4\frac{1}{2}$ Pounds, found in Muck Swamp near
Fredericksburgh, Wayne County.



Pre- or Inter-Glacial Implement found in Railroad Cut West of
Wooster. About one-half natural size.



Pre- or Inter-Glacial Tomahawk found in Glacial Deposit South
Wooster. About one-half natural size.

of Killbuck bottoms, below the fair grounds. The others were found when draining a muck swamp in a preglacial gorge down the head of the Cincinnati incline on section thirty-two, Milton township. They were not the only teeth recovered, for the family kept some, and I had two stolen from me. In addition, I have a number of shark's teeth, but of another species, recovered from the Newman's creek swamp near Orrville. How sharks got here is only surmise, but imagination whispers to me that they were stranded in the fissures of the hills, from the warm sea that surrounded the head of the island when the land rose and the sea gave place to a carboniferous forest. Since writing the above, I had a row of types of the small teeth found in Newman's creek swamp added to the plate.

THE INDIANS OF WAYNE COUNTY.

The legends and traditions handed down from the remote ancestors of the Leni Lenape or Delawares tells us that many centuries ago the country from the "Namaesi Sipu"—the Mississippi river—to the Alligewi Sipu—the Alleghany river—which then included the Ohio, was occupied by a people called Alleghewi, and to these people we are indebted for the names Alleghany mountains and Alleghany river. The Alleghewi were a tall and strong race, the Leni Lenape describing many of them as giants; but they were peaceful and inclined to agriculture. Still, they had many fortified towns, with ditch and embankment, surmounted with palisades. But their quiet was broken and the Alleghewi migrated to the far south, giving place to the Cat nation, who held and occupied the country from the Scioto river to Lake Erie, to which they gave name. The Leni Lenape had passed on to the Susquehanna and the Delaware river, and here received the name Delaware, after Lord Dela Ware, "a brave and good man." The Eries were a peaceful people, and ever a neutral nation in the wars, but this neutrality furnished an excuse to the intriguing and fiercely bloodthirsty Iroquois (Five Nations) for a war of extermination, and being supplied with guns and knives and tomahawks of steel by the Dutch of New York, they began the war of annihilation. The Eries, against such superior weapons, could do nothing—the nation was destroyed. That the Dutch were the devils in peace clothing that incited the Iroquois to deeds of violence and rapine and murder so that they (the Dutch) could secure the fertile lands of the vanquished is simply a matter of history (see Heckewilder, Zersberger and Loskeil).

The destruction of the nation was complete—most of the unfortunates murdered by the bullets and bayonets and steel tomahawks supplied by the

smiling Dutch, many of the prisoners were tortured until the Great Spirit anesthetized to fainting, when they were burned. A few were adopted by the more humane of the Iroquois and a few more escaped across the lake to Detroit from their last stand at their stronghold on Put-in-Bay Island in Lake Erie, the lake of their naming and loving. Another part, probably from this county and the Mohican valley, fled down the Muskingum and Scioto to the Ohio, and thence to St. Louis, and from there by degrees up the Missouri, establishing many towns and finally settling as Mandans on a beautiful and romantic spot on the north Missouri near Bismarck, North Dakota. Here they lived unmolested and happy for a time, but finally the smallpox within their fortified town of two thousand souls and the Sioux watching without, so they could not even bury their dead, brought their entire destruction.

So you see that the Indians the whites found here when they invaded the country were not native to the soil. The tribes then inhabiting Wayne county were the Delawares, the Mohicans and a few Mingoes, all of whom came here from the far east as the white man encroached upon them from the sea. When they came into Ohio they knew nothing, scarcely by tradition, of the mounds and relics in stone left here by their ancestors, and this is why we separate the Indian from the "Mound Builder." But as children they had been taught in a new school, of new things, by new teachers. They had learned to fight with new weapons and had been taught the practical meaning of treachery and vengeance; in place of tomahawks of granite and arrowheads of flint, they had guns and knives and tomahawks of steel for defense and offense. Their whole nature and manhood, from environment and association with the white man, had been warped from the original; they had been harassed by the Iroquois, cheated by the Dutch, filled with whisky by the English, and scourged from their hunting grounds by the psalm-singing Puritans, and driven with disgrace under the sobriquet of women into the Ohio country. What wonder they were called "savages," and what greater wonder that after such massacres, as unprovoked as was done with the one hundred defenseless Christian Indians at Gnadenhutten, and the thirteen tomahawked in their sleep on the site of the Catholic church in our own city, that they did not retaliate more than by burning Colonel Crawford. Colonel Crawford would never have been burned by Captain Pipe, save for the Gnadenhutten infamy, nor the Great Spirit-respecting, white-man-loving, hospitable gentleman Logan been transformed into a revengeful and merciless "savage" had not Captain Cresap been a fiend. Such acts, with many others recorded in history, would blur the fair face of nature and make hell shud-

deringly ashamed. It must not, however, be thought that I want to make the Indian an angelic or even a civilized character, but, leaving out the Iroquois and the Sioux, though we must relegate the North American Indian to the barbarian stage of human evolution—the savage being a retrogression—yet as nations or tribes they had many virtues and many noble, honorable, executive chiefs, with a true desire for peace, purity and advancement. The principal chiefs connected with Wayne county history were Killbuck, Beaver Hat, Custaloga, White Eyes, Half King, Mohican John and Captain Pipe. Want of room prevents any detailed history of these chiefs. A few notes must suffice. Captain Pipe (Hobacan in Indian) belonged to the Wolf tribe of the Delawares. He was born on the Susquehanna in 1740, and in 1758 located on the Tuscarawas. After the treaty of 1795 he came with other Delawares to near Mohican John's town, near Jeromeville, Ashland county. I have many times looked over the remains of Pipe's cabin, when fishing in the "Old Town run," and well remember when in 1841 a deputation of Delawares came to see if the graves of their ancestors had been desecrated. I then had seven skulls and many long bones of "dead Injuns" for a playhouse in the yard; the bones had been exhumed when digging a mill race. The red men called me to the gate and asked for "man-house." I ran for grandfather, the Rev. Elijah Yocum, whom they asked if they could bury the bones. He made for them a large box, when they gathered all other bones, and I saw them bury them with many curious signs.

Mohican John, with his tribe, was driven from Connecticut and Rhode Island. He came to Ohio in 1755 and first located at Tullihass, on the Big Mohican, where Owl creek enters. He removed to the "Old Town" home in 1795, and left about 1814. The trail from Tullihass followed the Mohican to the mouth of Killbuck, then up this to "Big Spring," the Wayne county home of Chief Killbuck, thence to the mouth of Crawford's run, up this to the Maize Mill, from whence the trail is followed by wagon road to Shreve, then to Odel's lake, and up the Mohican to Mohican John's town, on the "Old Town run"—Chief Beaver Hat had his winter wigwam near the Wooster cemetery, and in summer an "apple orchard" on the Apple creek. Chief Custaloga lived near Big Prairie, and the station on the Pittsburg, Fort Wayne & Chicago railroad depot is named for him.

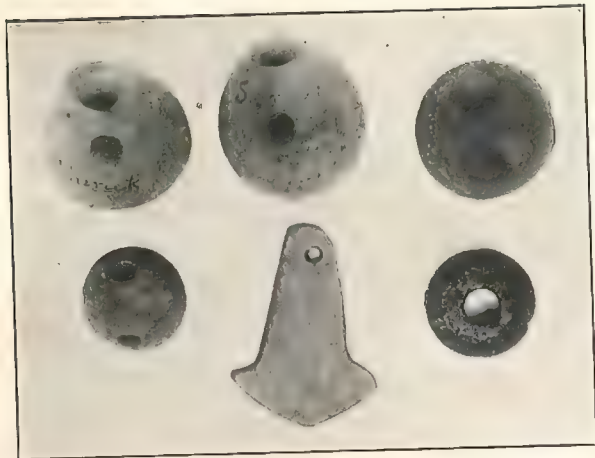
Captain Pipe, Killbuck (Gelelemand) and White Eyes were delegates to the great conference at Fort Pitt. Chief Killbuck's chief home was at Tullihass, but he had a cabin on the Thomas Douty farm, near the Big Spring, the great fishing place of the Indians and of the early inhabitants. Killbuck had two sons, one of whom was very dissipated and threw opprobrium on his

father. Captain White Eyes lived in White Eyes township, Coshocton county. He and Killbuck had strong desires that their nation might become a civilized people, but he died young, of smallpox, in 1778. Killbuck died near the mouth of the Killbuck in 1810, at the advanced age of eighty years. Excepting probably Captain Pipe, who was soured in old age, all these men were ambitious to protect their people, and they were all and al'ways honorable, peaceful men, and virtuous beyond their age. They were above the savage and were superior to all white barbarians. They were, "nature's noblemen," with the forest for a home, the groves in the meadows were their temples and council places, and contemplation compels one to repeat:

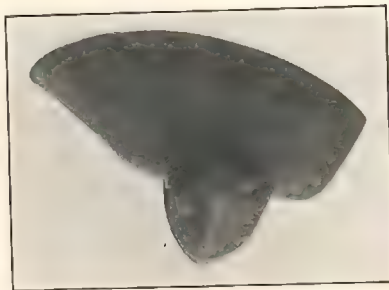
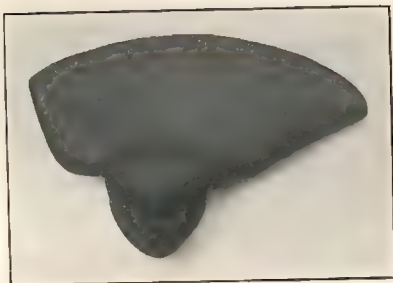
"Lo! the poor Indian, whose untutored mind
Sees God in clouds and hears Him in the wind.
His soul, proud, science never taught to stray
Far as the solar walk or milky way;
Yet simple nature to his hope has given
Beyond the cloud-topped hills an humbler heaven,
And thinks, admitted to that equal sky,
His faithful dog shall bear him company."

FORTIFICATIONS AND ENCLOSURES.

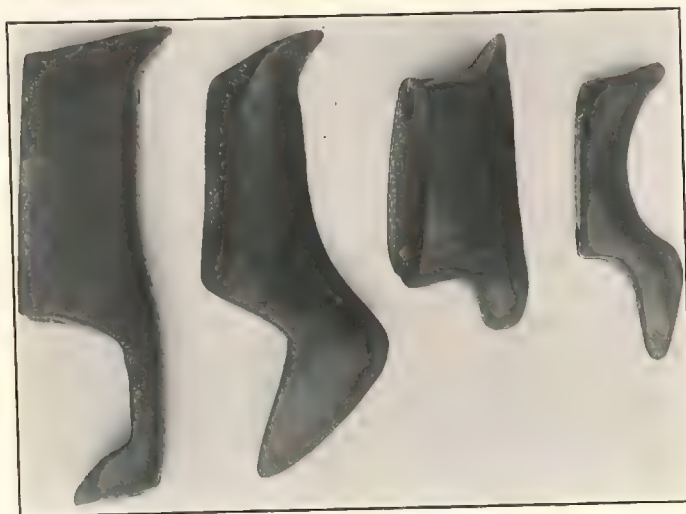
The remains of fortifications or enclosures for observation and protection are very numerous in Wayne county, particularly in the vicinity of Wooster, which seems to have been a commercial center for the aborigine as well as in our twentieth century civilization. Each and every one of the surrounding hills is crowned with an enclosure commonly called a "fort." The hills outstand as headlands overlooking the valleys of Apple creek and Killbuck and from any of these points observation and communication could be secured with other like crowned hills near Shreve and Funk, and Jeromesville and on to Ashland, Hayesville, Mansfield, Millersburgh. The construction of the walls of the enclosures was very similar on all the hills, viz.: a trench and embankment, surrounded with palisades. The largest enclosure, containing between thirty and fifty acres, was situated on Madison hill, the first location of the county seat, now the Experiment Station farm and Wooster cemetery. This had more the character of a "fort" than many others, for the north wall was partly built of stone, the construction being distinctly recognizable forty years ago, where the Moorland road cut through the wall, and the west boundary can even now be traced from the



Stone and Iron Ear-Rings and Pendant. About two-thirds natural size.



Two sides of a Totem, or Tribal Symbol; one side representing the head of a Bear, the other that of a Mountain Lion. About three-fifths natural size.



So-called "Bird" or "Saddle" Stones, Specialized in Black Slate. About two-thirds natural size.



east line of Wooster's new cemetery to near the north line of the Catholic cemetery. A mound was on the southeast angle above Experimental buildings.

One and a half miles up Killbuck from this, on the late Rose Ann Eicher farm, just below the Big Springs, is a beautiful oval enclosure, the bank of which is still complete and four feet high, the point of the egg extending almost to the bank of the Killbuck, which is here twenty feet high with a gully to the south, affording protection from marauders coming up or down the stream, which was then a boating highway from the Muskingum up to the portage between Burbank and Lodi on the Black river. The hill above the springs rises two hundred feet to a plateau, from which the Killbuck river could be scanned for many miles. The enclosure is still in the native woods and is undisturbed and the tract, including enclosure, springs, plateau and meadow adjoining the creek, should be preserved for a park, for, in the writer's opinion, it is the finest site for health and recreation in the county of Wayne or even the state of Ohio.

The next distinguished hill top is directly across the Killbuck valley from the above and is situated on a promontory in the angle formed by the junction of Little and Big Killbuck and known as Ft. Hill. The bluff is six hundred feet in long diameter and one hundred and fifty in the short, top surface. The sides are thirty-five feet high from the roadbed along the sides. On the northwest it is nearly cut from the mainland by a ravine, only a narrow neck connecting, which was guarded by a ditch and bank, probably palisaded. On the top is a circle about one hundred by eighty feet and there are also two mounds, each twenty-five to thirty feet in diameter and two to three feet high. There is an available spring on the west side and I am convinced that here was erected (or selected) a refuge and defense "fort." My opinion is strengthened by the fact of its commanding a long and wide view of the Killbuck valley, but primarily by the fact that out from its front at the distance an arrow would fly I have picked up in the last ten years over fifty warrior darts, the small triangular ones, so fashioned that if once driven into a body and the arrow shaft pulled out, the dart or point would remain and induce suppuration. Or may not the point have been poisoned?

The remains of an enclosure are still recognizable on the Bechtel hill near the Spring. This hill overlooks the Fair Grounds and the valley and across the Christmas run on a similar spur of hill is another well-marked enclosure, just above a fine spring.

There was a large enclosure on the hill southwest of Wooster that included twenty acres. It was situated between the two Killbuck bridges

and was peculiar in being double terraced on the stream side of the hill—one trench and embankment low on the hill and in the shale where the implements were of very old type, and about sixty feet above a parallel embankment that was probably palisaded. Here implements were of jasper and finely serrated on both sides. There was a fine spring in the enclosure and a deep ravine on the north side. The traces are now almost obliterated by plowing down hill, but sixty-five years ago when I first saw and played on the terraces it was plainly marked. A part was then in woods. A large enclosure was noticed on Bald hill, above Shreve, where Doctor Pocock opened many single graves. This faced one across the valley, but I can describe no more.

MOUNDS.

The mounds of Wayne county are many, but small, ranging from fifteen to fifty feet in diameter by two to six feet in height. A few fine gorgets, ceremonial stones and totems have been found in them, with arrow and spear heads. Most of them were opened years ago and no record kept, as the openers were simply relic hunters. The finest, to my personal knowledge, was opened on the bank of the Muddy fork near New Pittsburgh. There was found but one skeleton, on the breast of which was a large slate pendant, and around the thorax were laid thirty-five well worked leaf-shaped implements, four and one-half inches long by one and one-half wide at center, and one fine stemmed spear head six inches long, while at the hands lay two elegant, deep-grooved axes, with pointed poles, one of quartz and the other a light blue stone, the texture not determined. Both are perfect; I have all in cabinet.

There is a large mound on the Bob Snyder farm, a half mile up the hill from Kanke Station, that is unique in construction and history. The hill top on which it is located commands the most extensive and, the writer thinks, the finest pastoral view in Wayne county. The mound is fifty deep in diameter and was about nine feet high. It is in an unbroken woodland and covered with nature's forest trees, the roots of which greatly embarrassed digging and disturbed the strata. The bottom is formed like a low rimmed saucer, made of hard puddled clay, covered with three inches of sand, and scattered over this is a layer of charcoal, burned or charred bones and pieces of splintered flint; over this is another layer of puddled clay, covered with sand, and on this is more charcoal, incinerated bones and implements, broken up as by fire. Here the original mound, or place for cremation purposes, seems to have been completed or abandoned, for above this—about three feet high—comes

a two-foot covering of yellow clay, in which I found—in the trench, two feet wide, which I drove from periphery to center—two bundles of “long bones” and some loose bones, but no skulls. The long bones seemed to have been tied together, or thrown in piles as in communal burials and were so infiltrated with and cemented together by the tough clay, that I took them out entire and still have them as well as the charcoal, sand and contents from the bottom of the mound. In places the long bones had entirely decomposed in the clay, leaving only a hole—or cast—with a dark line to tell of the matrix. But this is not all of the mound, for over all of this had been heaped four or five feet of earth from the immediate surroundings, which completed a conical mound from the truncated ones of past ages. The late Dr. D. Pocock, of Shreve, opened this from the top in 1870, and secured two skeletons, two gorgets and a number of other relics. Of course the top layer represented late or intrusive burials, but the mound taken as a whole would indicate three different ages, with three distinct modes of interment.

IMPLEMENTS AND ARTIFACTS OF THE ABORIGINES.

With the word “savage” we instinctively couple the idea that the “flints” we find in the field are “arrow and spear heads,” and all made to be used in the *killing* of something, man or bird or beast. But this is farthest from the truth, for not one chipped flint or pecked stone in twenty was specialized for war or the chase.

The great mass of stone relics found are implements of husbandry or for domestic use. The first lesson the aborigine had to learn was how to live, not how to fight, for that was a luxury to be added later. To live, he must have food for his stomach and clothes for his body and a bed to lie on. His first need was a knife, and this was supplied in the flake of a flint, the first artifact of man’s ingenuity to supply a domestic want; with it the aborigine skinned his captured deer, fashioned its hide into clothing and bed quilts, cut up its carcass, shaped his defense club, and did so many other things with it, that I am prompted to ask you “What do you do with a knife?” In determining the use of the implements of primitive man, we must be as familiar with the management of thought as a painter is in the manipulation of colors; we can take cognizance of an object only in so far as we can come into relation with it, and in the contemplation of Indian implements we cannot place ourselves in such complete association, for environment and the needs of the user, together with the mental status of the maker, must be supplied. This

can only be done by considering what is positively known of uses by existing barbarians, or those yet in the stone age, or by tradition, or finally by the imagination.

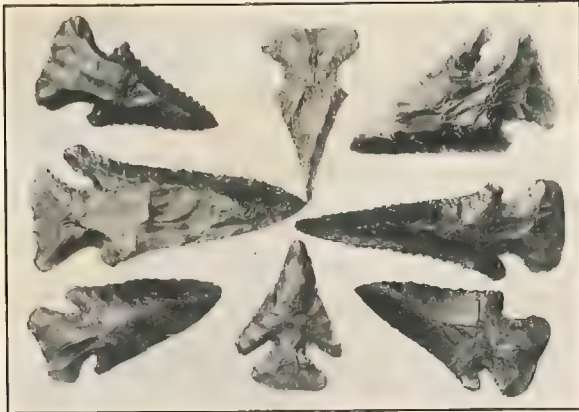
So all positive knowledge is in a chaotic state, save that which has been or is gained by field work and collecting which associates the implement with its location. Its geologic horizon determining its age; its connection with a mound showing it to be mortuary; its association with a fortification proves defensive war; while if rescued from an enclosure we reckon it the local fauna of a village site.

So in studying the character and mode of manufacture of primitive man's relics you must try to *put yourself in his place*, as you should with Moses and his tablets of stone.

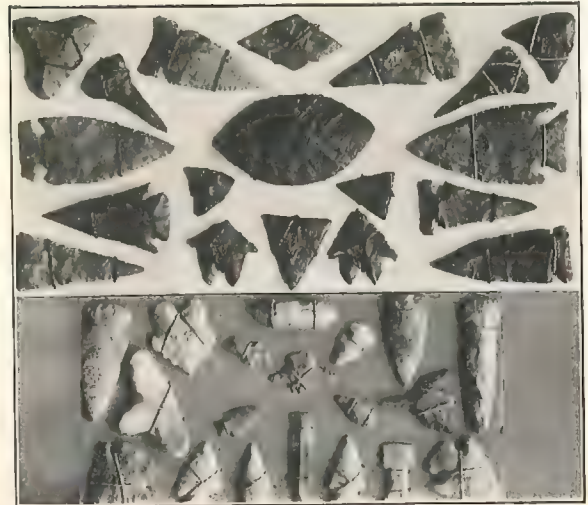
For these, and many other reasons, I have coupled Wayne county (where most of my thirty thousand specimens were collected—over three thousand with my own hand) with types of implements, for comparison and unison,—from the streams of adjacent counties representing the seven heads of the Muskingum river, viz.: the four forks of the Mohican, Killbuck, Chippewa creek and Sugar creek. In all of these the writer has personally noted the horizon of village sites, mounds and enclosures, and finds that both banks of the Killbuck present almost continuous village sites. At every spring that is surmounted by a knoll are found the chips or flakes and "wasters" that proclaim a work shop, and along many of the smaller streams the same evidences were found.

There are three principle types of relics. The first is the chipped or flaked implement of flint. Flint breaks when struck or firm pressed with a conchoidal—like a watch crystal—fracture, producing a sharp edge to core or implement as well as to the flake and this flake can be used as a knife, or if a larger spall, even as an ax. The second is the pecked and polished implement—polished at least at the cutting edge, such as the grooved axes, celts, tomahawks made of granite, greenstone, diabase, quartzite and argelite. These must be first pecked into shape with a harder stone and then polished. The third comprises the class of beautiful souvenirs done in slate; the gorgets, done in all imaginable artistic forms, to be worn on the breast as marks of distinction, or carried in any manner fancy, fashion, or cast, would dictate, have been found in the county in great numbers.

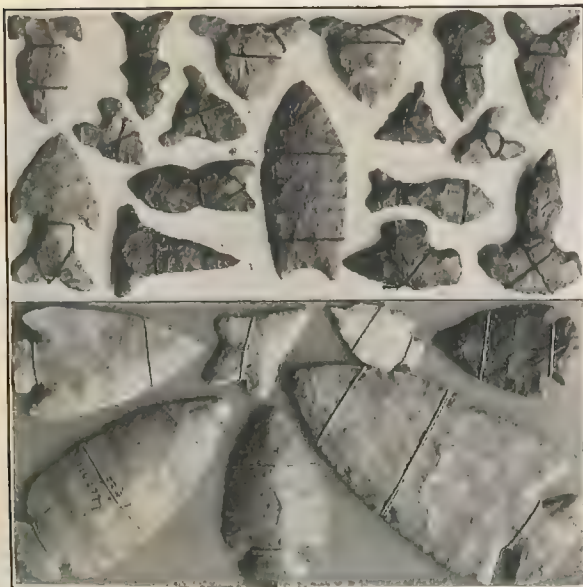
The "bird stones," over which the marriageable maiden coiled and dressed her hair, are less numerous, but in the writer's cabinet there are half a dozen; but they do not all represent birds nor "saddles," for one has the head of a mountain lion and another the head and tail of a beaver, so I reckon they were totems as well as decorations.



Types of Beveled and Serrated Knives found in Wayne County.
About one-half natural size.



Upper Part: Types of Black Flint Arrow Points and Knives.
Lower Part: Fancy Jasper and Chalcedony Artefacts.
About one-half natural size.



Upper Part: Effigy Artefacts representing Buffalo Skulls, Wolf
and Fox Heads, Tadpoles, Fishes, Etc.
Lower Part: Jasper Implements with beveled Base.
About one-half natural size.



Upper Part: Flint Digging Implements of Unique Shape.
Lower Part: Jasper Implements of Unusual Forms.
About one-half natural size.



The totems, of which several are represented, are usually in banded state and finely specialized and are evidently the insignia of a tribe. The tubes may be either pipes or "cupping tubes" used in legitimate medication or the necromancer's winch by which he catches the evil spirits infesting the patient and sucks them through the skin, usually depositing a mass of foul tobacco on the reddened place, which he exhibits as the disintegrated spirit.

The butterfly stones are beautiful, as may be seen in the illustration. In addition to these, there are armlets, pendants, beads, ear rings (some of stone, averaging two and three ounces), hair pins and perforated pieces without number that were certainly made for a purpose and either used at religious ceremonials, or in the dance, or to ward off evil spirits or to be worn as decorations. But you must give wild wings to your imagination and let fancy carry you to the wild man's home in the woods if you would learn all their uses and meanings.

VILLAGE SITES.

The most remarkable village site in Wayne county is on the old McClelland farm in the angle formed by the union of Crawford's creek with the Killbuck near the coal chute. Here the writer has found three village sites superimposed one above the other. In the oldest you find implements of the rudest construction, made from the crudest material, as pebbles from the brook and cherty limestone from the Moorland hill and most of the chipped relics deeply patined. The next class are better specialized and the flint mostly from the quarries near Coshocton. The top artifacts show great art in the pattern and dexterity in the artisan, while finer flint is used, much being the beautiful chalcedony from Flint Ridge and another, black or blue gray that works elegantly; but the quarry has not yet been located. I have over one thousand specimens from this site and among them is a cache of fifty beautiful leaf shaped artifacts, made from clear white flint, with a jasper lustre. On the headland above this terrace are the remains of an enclosure and on the apex a small mound, from the *base* of which I took the emblem of Sun Worship, representing the rising sun and the four points of the compass. This mound had been opened by John Rahm and many relics taken from the top, showing an intrusive burial.

An unique village site was found on the Meier farm, section 2, Franklin township, on the gravel kames surrounding an old silted-up lake. Here many of the implements were made in effigy, both flora and fauna represented, as buffalo skulls, head and ears of the wolf, fish, tadpoles, birds in flight, leaves of the trees, etc., brooches and beads in jasper, together with digging implements of elegant pattern and utility.

But along with these were many crude knives and darts, some of which had been rechipped and showed deep patterning, evidently the remains of an old and vanished race whose relics were rejuvenated and utilized.

The last village site I will note is on the terraced bank of the Apple creek, southeast section, Wooster township. Here was the beautiful summer home of Beaver Hat, his Apple Chauque cake (Apple Orchard). Here a thousand fine relics were found of flint and slate and stone, unsurpassed if equaled in the state. Among them the rare and beautiful Indian head, illustrated imperfectly herein. The sculpture is done by chipping so fine that a glass has to be used to see it. The effigy shows the stately pose of the Indian, high cheek bones, partly shaven head and the two long locks of black hair parted and carried over the bared breast. So perfect is it that an eminent archaeologist said on seeing it, "had the maker been possessed of tools he would have been a Michael Angelo." The form is enlarged, which mars its fineness.

GENERAL RELIQUA.

The reliquia of Wayne county I think was equal in amount to that of any county in the state, and for quality of material, elegance of workmanship, variety of expression and artistic design, was superior to most (excepting of course the effigy pipes and copper ornaments of the mound builders of southern Ohio), but many of the early surface finds when only the finest were picked and preserved by the pioneers were destroyed mostly by fire. Doctor Pocock's collection at Shreve, consisting of many thousand relics, and the collection gathered by President Taylor for Wooster University, all went to flinders when the buildings went up in smoke, while the large collection of Mr. Reed, of Dalton, was removed from the county. But with all this, I still have thirty thousand perfect specimens, including over fifty different patterns of grooved axes and hatchets (celts), and every form of pestle known to Ohio; pipes of slate, sandstone and baked clay with others known as monitor and effigy; bird bunts, to stun, not penetrate; arrow points for larger game, finely specialized and long buffalo darts; warrior darts, to poison or fester the flesh; flints, with polished bases; spear heads of every pattern, knives, scrapers, hide dressers, bark peelers, beads, ear rings and brooches, fish hooks in flint, crochet hooks for net making and net sinkers; piercers and needles, with polished slate pieces without number, including totems and religious ceremonials.

But to describe them here without illustration is impossible. I can only refer you to Squire and Davis, who opened the mounds of Ohio at an early

date, and ask you to read and study the illustrations in Gerard Fowke's remarkable book, the "Archeological History of Ohio."

POTTERY.

The creation of utensils for domestic use by moulding clay and then burning it was one of the first expressions of man's inventive power. The early forms were crude: A straw basket was woven and the moist clay, mixed with pounded shells, was pressed into the meshes from the inside, and the semblance of a pot placed in the sun to bake.

In the world's development, life had been given to man, but the struggle to keep it was hard and required all his energies. Life had been given to the troglodyte, but life had also been given to the saber-toothed tiger, the serpent, and the mammoth and they too loved and fought for life. The man must overcome them or perish. Intellectual comparison was yet in abeyance, the troglodyte's brain was yet boggy, and the time of waiting was long before God said, "Let *life* and *thought* together meet and mingle and man be a *reasoning*, as well as a *living* soul." But it came at last, and marked the first great crisis in the troglodyte's evolution—the age, or stage of *inventive reasoning*. Now he could lay traps, create implements of aggression, secure food, protect his family, and rest secure in his cave at night.

Art necessitates leisure and leisure only comes after the body is well clothed and the stomach filled to satiety; so the troglodyte was no artist, all his implements were of the crudest, and the rudest; but when reason was added to instinct and the tongues of the glacier had receded and left flower gardens in their wake, as they now do in Alaska, and the fiercer animals gave way to the reindeer, the bear and the buffalo, then his hours were more peaceful and not all occupied in securing food and shelter. He had leisure to contemplate and decorate.

After this brain storm that cleared his perception and added *purpose* to his conception, primitive man's first thought was to better and beautify his game-killing implements, and, second, to create more useful and artistic furnishings for his household. Hides must be tanned to preserve and render them supple, and the rude and fragile drinking and cooking utensils must be made more durable and attractive, and in this inspiration is to be found the nucleus of pottery making and of pottery decoration.

The remains of primitive pottery in Wayne county are very meager in comparison with those of southern Ohio and are mostly confined to separate

fragments or pot sherds, and these seem to be largely mortuary, as but few fragments are found on the surface or in the kitchen refuse.

The writer knows of but one complete vessel found in the county. This was encountered while workmen were grading a hill of undisturbed glacial gravel south of Wooster for an addition to the Wooster cemetery. The relic was about three feet from the surface when struck and shattered by the plough. It was a large and well formed bowl with unique decorations on the sides and an artistically fashioned rim; it was shaped like an old-fashioned boiling pot, with bulging sides. The depth was nine inches, the diameter at bulge fifteen inches and at the rim twelve inches. The bottom was very thin, one-fourth inch, but very compact, while the rim showed a band one-half inch thick and one inch wide around the top and this embellished and strengthened by graceful elevations at intervals. In the bowl was only a few handfuls of dark oily mould, and the writer's opinion is that the vessel was a mortuary bowl.

BURIALS.

Except the cemeteries of the late, white contaminated Indians and intrusive burials in mounds, I have found but two sepulchres worthy of record. The first is a "stone grave" on the farm of the late John Culbertson. It is located on a terrace of the Little Killbuck just opposite "Fort Hill," above described. It was made of shale flagging, from the brook. A layer of slabs for bottom, sides and top; was about three feet deep, but the skeleton was so decayed that nothing was left but a line of dark mould and a few undistinguishable bones that went to powder when exposed to the air.

The second was found on a promontory of shale, capped by forty feet of glacial gravel abutting on the Pittsburg, Fort Wayne & Chicago railroad in section 29, Wooster township, and above the terrace on which the three-ly village site is located. Workmen, in cutting a new road through the hill, came across a unique grave. As soon as discovered, the writer was sent for and found a skeleton in a *sitting position*, facing the south; the knees were drawn up and arms extended over them or to the side. The grave was elaborately prepared, the bottom being seven feet from the surface. The enclosure resembled a large old-fashioned store box, three by four by three feet in size. The sides, back and front were formed of a double thickness of heavy bark, with bottom and top of split puncheon, three and four inches thick and six to ten inches wide. At the right hand of the pelvis was the half of a huge mussel shell, four by seven inches, in which was two ounces of red paint, and on the left was a duplicate shell containing white paint. Bark and

puncheon, shells and skeleton went to pieces when exposed to the air, only the paint remaining. Burials of this kind are very rare. Gerard Fowke, the most experienced archaeologist and field worker in Ohio, says in his "Archaeological History of Ohio," "I have never found a skeleton which had been placed in a sitting posture," yet I have found one other in a similar gravel hill near Captain Pipe's cabin at old Jerome Town. The prime fact in these burials was that the skeletons were without their skulls, the heads had evidently been removed before burial; whether to retain the vigor of the chief, or other noted personage,—as the medicine man—to the tribe, or on account of the superstition that the spirit of the dead should not be given to the worms, is all conjecture—exercise your imagination.

